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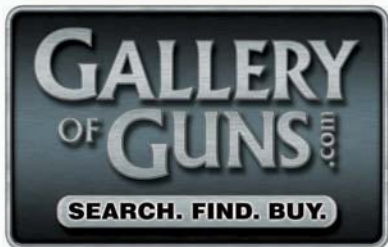
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Cavalry SX Combo 2 Barrel Set

Item #: **ATIGKOF410-28SV**
 Caliber: **410 Gauge | 28 Gauge**
 Sights: **Front: Brass Bead**
 Capacity: **2**
 BBL: **26" | 26"**

- Blue Finish
- Walnut Stock
- Over and Under
- Chrome Lined Barrel
- Single Selective Trigger
- Multi-Choke



686 Silver Pigeon 1

Item #: **J6863J8**
 Caliber: **12 Gauge**
 Sights: **Front: Metal Bead**
 Capacity: **2**
 BBL: **28"**

- Blue Barrels, Nickel Plated Receiver with Scroll Engraving
- Checkered Walnut Stock
- Over and Under
- Single Selective Trigger
- MobilChoke (Full, IM, Mod, IC, Cyl)



A400 Xtreme KO

Item #: **J40XV18**
 Caliber: **12 Gauge**
 Sights: **Front: Metal Bead**
 Capacity: **4+1**
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- Optima HP Field Chokes (Full, Mod, IC)



Citori 725 Field

Item #: **0135303005**
 Caliber: **12 Gauge**
 Sights: **Ivory Front and Mid Bead**
 Capacity: **2**
 BBL: **26"**

- Blue Barrels, Silver Nitride Receiver
- Grade II/III Walnut Stock
- Mechanical Trigger System
- Selective Ejectors
- High Relief Engraving
- Three Invector DS Choke Tubes (Full, Mod, IC)



BPS Hunting

Item #: **012211605**
 Caliber: **20 Gauge**
 Sights: **Bead**
 Capacity: **4+1**
 BBL: **26"**

- High Polish Blue Finish
- Walnut Stock and Forend
- Bottom Ejection
- Dual Steel Action Bars
- Multi-Choke (Full, Mod, IC)
- Top Tang Safety



M87 Pump

Item #: **HAT871228**
 Caliber: **12 Gauge**
 Sights: **Front: Fiber Optic**
 Capacity: **4+1**
 BBL: **28"**

- Matte Black Finish
- Turkish Walnut Stock
- Large Slide Release Button
- Sling Swivel Studs
- Multi-Choke (Full, Mod, IC, IM, Skeet)



Model 500 Bantam

Item #: **50112**
 Caliber: **410 Gauge**
 Sights: **Twin Bead**
 Capacity: **4+1**
 BBL: **24"**

- Blue Finish
- Black Synthetic Stock
- 13" Length of Pull
- 3" Chamber
- Fixed-Full Chokes



Model 500 Turkey / Deer Combo with LPA Trigger

Item #: **53267**
 Caliber: **12 Gauge**
 Sights: **Adjustable**
 Capacity: **5+1**
 BBL: **24"**

- Mossy Oak Obsession Finish
- Mossy Oak Obsession Synthetic Stock
- (2) Barrels: 24" Multi-Choke (XX-Full) & 24" Rifled Bore
- Sling Swivel Studs



V3 Field Sport

Item #: **83400**
 Caliber: **12 Gauge**
 Sights: **Front: Bead and Center Bead**
 Capacity: **3+1**
 BBL: **28"**

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- Black Synthetic Stock
- Light Countour Barrel
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Photo by Mike Dickerson

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ON THE COVER:
Photograph courtesy of CMMG
Cover design by
Johann Frederick Mendoza



Buyer's REMORSE

By Craig Hodgkins

Earlier this week, I received an alert on my iPhone suggesting that I follow Hillary Clinton on Twitter.

Clearly, despite all the time we spend together, my smart phone isn't very smart.

But besides being wrong on so many levels, this automatic, sponsored message from one of my iPhone apps also reminded me how convoluted our external identities and personal preferences can become in this age of technological dependence and widespread information collection.

If you shop online with any regularity, as I do, you know how easy it is to confuse (for example) Amazon's purchase history tracker. For example, I buy a lot of items for myself, but I regularly purchase gifts for a variety of friends and family members as well.

Currently, Amazon has me figured for a fan of 1960s jazz and folk music, Simplicity dress patterns, Terry and the Pirates and Mickey Mouse comic collections, figure skating tutorial DVDs, Minecraft strategy guides, college history and cinema textbooks, macramé, cookie cookbooks, LEGO construction sets, and hydroponic gardening.

Roughly half of those purchases were for me (I'll let you figure out which ones), but now, and probably for time immemorial, my Amazon account page will feature targeted advertisements for many hobbies in which I am not even remotely interested.

When I was a kid, there were three television networks, but more than twice that number of daily newspapers serving New York City alone. Today, that percentage has drastically shifted from print to visual delivery systems, but the biggest change is not in how and what we can learn about the world, but what certain entities are able to learn about us based on information we provide.

Most of the time, this information is as harmless as Amazon deciding I'm a figure skating, dressmaking hydroponic gardener, but occasionally it gives me pause.

Before becoming editor of this magazine, I flew more than 500,000 business miles spread among most of the major airlines. Not once did I open my suitcase in a hotel to discover a tag from the TSA to inform me that my checked bag had been searched.

In each of the past two years, I have attended SHOT Show, the NRA Meetings and the NASGW. Three times I have opened my bag to discover a TSA tag.

I may not always be as smart as my phone, but I'm starting to suspect that this sort of profiling is not a coincidence.

Maybe I'll tweet about it and see who follows me.

CRAIG

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NEW PRODUCTS

▼ The Foxpro Fusion main unit, weighing just 2.5 lbs with batteries, comes pre-loaded with 100 sounds and has room to store 1,000. **MSRP is \$499.95.**



Fusion *Fantastic*

Text & Photos by Mike Dickerson

The new and improved e-caller from Foxpro may compel you to say good-bye to one of your old friends

I'm not that guy who just has to have the latest, greatest technology. If something works well, I'll use it until circumstances compel me to move on. That was the case with my favorite e-caller, the Foxpro FX5. When first introduced years ago, it was viewed as one of the coolest tools ever invented to help attract and perforate predators, and it

helped me terminate the careers of many a toothy critter.

Taking it out of action recently for a minor repair gave me an opportunity to check out one of Foxpro's newest e-callers, the Fusion, and I quickly discovered that the amazing technology packed into the Fusion left me and my trusty FX5 in the dust.

The main unit, available in "skull camo," has dual amplified speakers (horn front and cone rear) that deliver crisp, clear sound. It has jacks to connect two additional external speakers and an auxiliary jack that works with decoys like the FoxJack and Black Jack. There's also a charging jack to use with an optional eight AA NiMH recharge-

able battery kit, which I strongly recommend. You'll also find a USB 2.0 port to connect with your computer and load sounds or sound sequences, or reprogram sounds. The main unit weighs just 2.5 pounds with batteries.

The Fusion is supplied with Foxpro's TX-1000 remote with a color graphic LCD screen. This remote is reason enough to purchase the Fusion. It is light years ahead of the remote for my old FX5. It's much easier to read and operate, regardless of lighting conditions. Gone are the old knobs that required you to cycle through your entire list of sounds to find what you want. Instead, you'll find four preset buttons, some special function buttons and a center scroll/volume/select button arrangement that's familiar to anyone who's ever used a TV remote control.

One feature I really like is the fact that the Fusion comes with 100 sounds that are organized into folders, by category, making them much easier and faster to find on the remote. With 4 GB internal memory, there's room to store up to 1,000 sounds. Compatible file formats include FXP, 24B, WAV and MP3.

The remote displays a lot of useful information at a glance, including moon phase, barometric pressure, temperature, battery strength and elapsed time on stand. It is also your command center for accessing and operating a host of features that give you a real advantage in the field.

One truly useful feature is FOXBANG. With this enabled, an internal sensor in the remote detects the sound of a gunshot and instantly switches to a sound of your choosing, such as distressed coy-

ote, to freeze runners and buy time for additional shots.

Another useful function is FOX-FUSION, which lets you choose and play two different sounds at the same time, such as a growling coyote and a distressed fox. This ability to tell a story, so to speak, can make a big difference when calling educated coyotes. So can the ability to vary the pitch of a sound, which is what you get with FOX-PITCH. Cranking up the pitch and intensity of a given sound may be all you need to convince a hung-up predator to keep moving into range.

Another clever feature is FOX-MOTION, which can fade sound back and forth from speaker to speaker to convey the impression of moving, struggling prey animals. This greater realism may seem like a small advantage, but in predator hunting it always pays to capitalize



▲ In addition to a USB port inside the battery compartment, the fusion has a charging jack, an auxiliary jack for use with decoys and two jacks to connect external speakers if desired.



▲ The TX-1000 remote supplied with the Fusion is light years ahead of predecessor remotes with a color graphic LCD screen, dedicated special function buttons and a center scroll/volume/select button arrangement that's as familiar as a TV remote.

on every advantage you can find, especially when hunting heavily called country where predators may be well educated on standard sounds. FOXMOTION, combined with the use of a decoy, makes things about as real as they can get short of staking out an actual screaming rabbit. There's even an auto volume feature, which starts playing a sound at a low volume setting and gradually ramps up before modulating the sound up and down automatically.

Another feature, FOXDATA, allows you to maintain a detailed record of useful information for each stand and, eventually, compile a record of your successes based on actual data.

All of this is mastered with relative ease, but there's a bit of a learning curve associated with one of the more advanced features. FOXCAST allows you to call virtually hands-free by utilizing pre-programmed calling sequence files. You can create these yourself using

“I quickly discovered that the amazing technology packed into the Fusion left me and my trusty FX5 in the dust.



▲ A closer look at the TX-1000's color graphic LCD screen.

various software programs, but an easier option is to go to the Foxpro online FOXCAST sequence generator, which you can access via the Foxpro web site.

Sadly, my old FX5 may have seen its last day afield, but the Fusion is just getting started. **GW**

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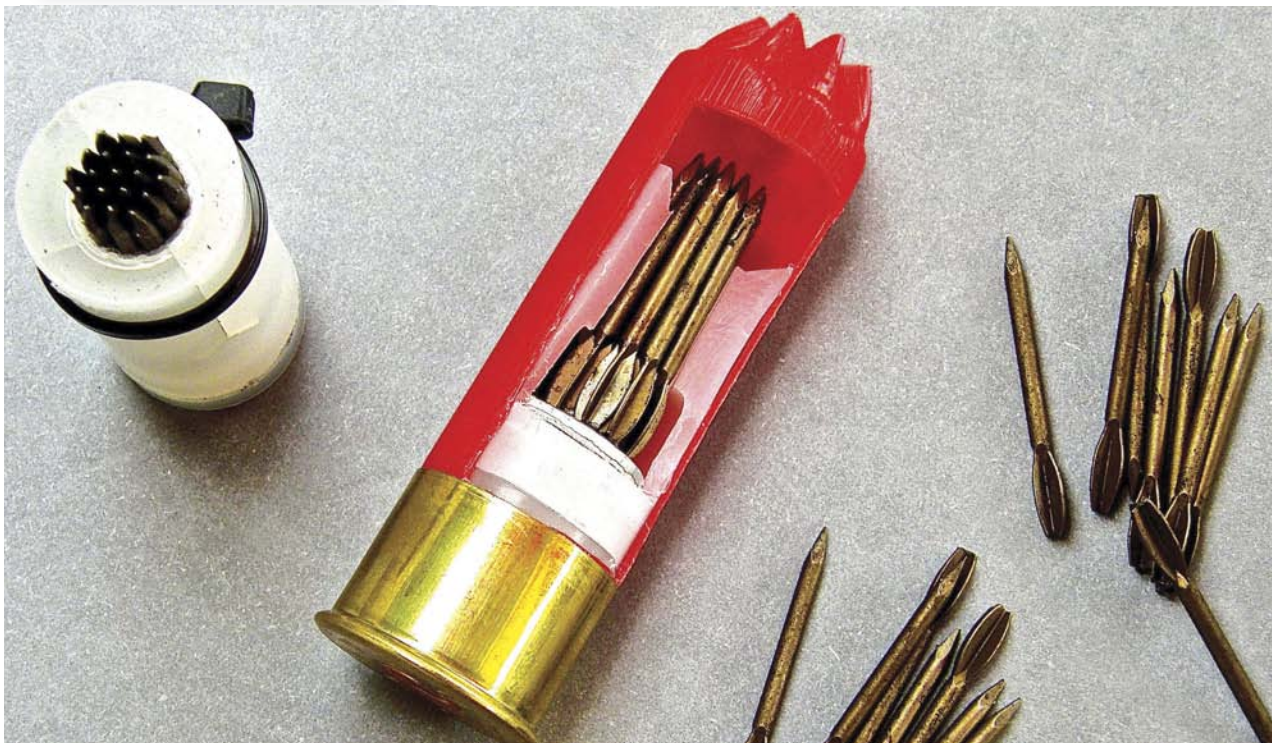
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▲ Left to right: the sabot with flechettes packed inside, a cutaway of the sabot flechette round, and individual flechettes. (Leroy Thompson photo)

Flechette **FAN**

Question: In one of your shotgun articles you mentioned the flechette ammunition used in Vietnam. Is flechette 12-gauge ammunition still available today?

Ed S., Pittsburgh, PA

Leroy Thompson answers:

Yes, there is some excellent 12-

gauge flechette ammunition, which uses a sabot until it leaves the barrel to tighten the pattern and keep the flechettes together to prevent deforming. Available from Sabot Designs, LLC, this ammunition is more effective than the Vietnam-era flechette rounds because of high quality control on the flechettes themselves and the assembled ammunition. One of Sabot

Designs' 12-gauge flechette rounds employs 19 Mil Spec 8-grain flechettes with a mean muzzle velocity of 1,925 fps. Against soft targets, these flechettes perform well at longer ranges.

I have been told that these Sabot Designs flechette rounds are very popular with pig hunters and have performed extremely well. Note that anyone ordering flechette rounds should check their local laws as some jurisdictions may have restrictions governing their purchase or use. **GW**

For more information visit: www.antipersonnel.net

Our August Expert:

Leroy Thompson is an internationally recognized authority on weapons and tactics, and is the author of more than 50 books.



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The Best of ***BOTH WORLDS***

Text & Photos by Mike Dickerson

CMMG's new MK47 'Mutant' hybrid AK/AR rifle shoots so well — without breaking the bank — that you'll have a hard time putting it down





AK versus AR. The contest between these two iconic firearms has played out on battlefields around the world for decades, and the relative merits of these rifles are as hotly debated today as they were at the peak of the Cold War.

CMMG's goal with the MK47 Mutant was to deliver AR accuracy with AK reliability.



▲ For testing, the author mounted a Leupold Mark AR Mod-1 3-9x40mm scope with the rugged Burris PEPR mount.

CHOOSING SIDES

Proponents of Mikhail Kalashnikov's AK-47 design praise its low production costs, high reliability and relatively hard-hitting 7.62x39mm chambering, although the design would eventually evolve into the AK-74 with a lighter 5.45x39mm cartridge.

Fans of Eugene Stoner's design assert that the AR-15's lighter weight, its accuracy and its effective range trump the Kalashnikov, albeit with a 5.56x45mm NATO cartridge that many still criticize as "underpowered."

And so the debate raged, with arguments generally boiling down to "AKs are cheap and inaccurate," and "ARs are expensive and finicky."

Until recently, if you were in the market for a modern sporting rifle, you pretty much had to pick a side and choose one or the other.

LOVE CHILD?

That all changed in the last couple of years as hybrid rifle designs, combining aspects of an AK with an AR, began popping up like desert wildflowers after a heavy rain. One of the newest — and slickest — hybrid designs to hit the market is CMMG's MK47 Mutant.

At first glance, the Mutant looks a lot like most AR-15s, but with an evil socialist banana-shaped magazine inserted into the magazine well. If you didn't know what you're looking at, you might

suspect that Stoner's and Kalashnikov's creations ran off together and bred, producing some bizarre, East-meets-West Frankengun offspring. Surprisingly, this turns out to be a good thing.

EVOLUTION OF THE SPECIES

Although the Mutant superficially resembles other AR rifles, closer examination reveals some significant differences between the Mutant and a garden-variety AR.

For starters, the lower receiver is dimensionally longer than that of an AR-15 receiver. It had to be in order to accommodate AK magazines and a unique magazine release. In fact, the receivers are built

specifically to handle the 7.62x39 cartridge, so you can put aside any thoughts of mixing and matching uppers with the lower. You can, however mix and match a lot of standard AR-15 components, such as the grip, stock, trigger group, gas system and buffer tube.

One thing you'll quickly notice about the Mutant are the things you won't notice at all because they're not there. Most notably, there is no bolt lock/release button, which means you have no way to lock the bolt open.

To those unfamiliar with the AK-47, the bolt doesn't lock back after firing the last round in a magazine. Rather, it informs you that it's empty by going "click." I'm not crazy about that, but it was a necessary tradeoff to allow the Mutant to ac-

cept all standard AK magazines.

Another AR-style control you won't find on the Mutant is the traditional AR magazine release button, which has been replaced with an ambidextrous paddle-style magazine release. This takes a bit of getting used to, but it works quite well.

Magazines are loaded by pivoting them into place around a steel support pin, located inside the front end of the magazine well, rather than by simply inserting them and driving them home, AR-style. The steel pin allows the gun to accept steel AK magazines without damaging the aluminum magazine well.

The only traditional AR-style control you'll find on this rifle is the two-position safety, which is located in the usual spot and works in the usual fashion.

■ WHY AND HOW

One of the obvious benefits is the ability to burn through a lot of cheap ammunition without breaking the bank.

Another is to take advantage of the unrivaled modularity of the AR platform, which allows you to mount any and all accessories you care to stack on it. The Mutant, with its flattop upper, gives you plenty of options with a full-length Picatinny rail and CMMG's RKM KeyMod hand guard. This setup provides you with attachment slots at the 3, 6 and 9 o'clock positions.

According to CMMG, the Mutant's purpose in life is to combine "the accuracy and modularity of the AR-15 with the reliability of the AK-47." Accuracy, of course, begins with the barrel, and the version of the



▲ CMMG's removable SV muzzle brake keeps muzzle rise to a minimum.

“The Mutant looks a lot like most AR-15s, but with an evil socialist banana-shaped magazine inserted into the magazine well.



▲ The Mutant sports quality furniture, such as this Magpul MOE pistol grip.

SPECIFICATIONS

CMMG MK47 MUTANT

Action: Gas-operated semi-auto

Caliber: 7.62x39

Barrel: 16.1 inches, medium taper, chrome moly, 1:10 twist

Handguard: CMMG RKM 15

Furniture: Magpul MOE pistol grip

Stock: Magpul 6-position adjustable

Muzzle Brake: SV, threaded 5/8-24

Weight: 7.2 pounds, empty

Length: 33.5 inches with stock collapsed

MSRP: \$1,649

Mutant I tested (MK47 AKM) came equipped with a 16.1-inch medium taper, chrome moly barrel with a salt bath nitride finish.

The free-floated barrel, which has a 1:10 rate of twist and wears a removable CMMG SV muzzle brake, is mated to a carbine-length direct-impingement gas system. I call that a good start.

The new, mid-sized receivers are carved from billet 7075-T6 aluminum and are based on CMMG's MK3 platform, which is chambered in .308 Winchester. They have a matte black, hard-coat anodized protective finish.

Slimmed down in profile, the receiver helps to keep weight, unloaded, down to a surprisingly light 7.2 pounds. It also gives the Mutant a rather lean, sleek appearance, in contrast to the bulky, graceless ap-

pearance of an AK-47.

Sure, they run off the same banana-shaped magazine, but side by side, it's like looking at a Maserati parked next to a Chevy Suburban.

BEEFY BEAUTY

Don't let the Mutant's good looks fool you; there's plenty of beef under the surface. Unlike some hybrid rifles, which simply use a bolt with an enlarged face, the Mutant's substantial bolt carrier group is actually a cut-down AR-10 (.308 Winchester) derivative based on the MK3 design.

The bolt itself is larger, with thicker locking lugs than those on standard AR designs, and the bolt carrier is bigger with the exception of the rear section which matches up with the buffer tube. This all equates to a heavier bolt carrier

group paired up with a heavier recoil spring.

Everything works out great in terms of reliability, but that stiffer spring can be a double-edged sword, which brings us to one part of the rifle that could, in my opinion, use some improvement.

■ CREATIVE OBSERVATIONS

With its standard AR-15-sized charging handle, the rifle is much harder to charge than an AR-15, especially with a scope mounted and the ocular lens positioned near the charging handle.

It takes a lot of leverage to charge the gun, and the charging handle feels, to put it politely, inadequate to the task. At one point, I got a little careless with it and got a painful pinch of a reminder that I ought to take greater care with my finger placement.

This issue is naturally compounded by the absence of a bolt

hold-open feature. With a little practice, I adapted, but I would gently suggest to CMMG that there's considerable room for improvement with the charging handle.

Given the rifle's other attributes, I don't see this as a deal breaker, but it will require you to adapt to the gun and charge the rifle with practiced assertiveness.

In keeping with this rifle's stronger-is-better approach, it has a large metal trigger guard that should allow you to shoot comfortably while wearing gloves. You get an AR-style dust cover and shell deflector, as well.

Of course, some tradeoffs are to be expected with hybrid rifles, and that is true of the Mutant. You're stuck with a proprietary receiver and bolt carrier group, but just about everything else can be easily interchanged with standard AR-15 components.

Add to that the ability to accept

a wide array of different magazines and ammunition, from cheap surplus fodder for plinking to premium rounds with respected hunting bullets, and you've got a handy, fun and versatile platform.

The only question that remained in my mind was whether the gun would shoot well enough, with a cartridge that has never been noted for its stellar accuracy, to make it worthwhile.

■ HOG-BUSTIN' POTENTIAL

I didn't bother shooting cheap, surplus ammo in the MK47 because I was far more interested in the rifle's accuracy potential when used with hunting and specialized self-defense loads. I had a limited selection on hand, but was able to run a couple hundred rounds down the barrel without a single malfunction. I did so without cleaning or lubricating anything in advance because I wanted to see how the gun ran out



▲ The Mutant sports a Magpul six-position adjustable stock.



► The Mutant may accept bulky AK magazines, but it retains a sleek, trim appearance and excellent handling characteristics thanks to a slimmed down receiver and clean lines.

◄ The MK47's beefy bolt carrier group is actually a cut-down AR-10 derivative based on CMMG's MK3 design.

PERFORMANCE RESULTS:

CMMG MK47 MUTANT RIFLE 7.62X39

LOAD	AVG. MUZZLE VELOCITY (FPS)	AVG. 100-YARD GROUP (INCHES)	BEST 100-YARD GROUP (INCHES)
Federal Fusion 123-gr.	2383	1.15	0.80
Hornady 123-gr. SST	2374	1.52	1.30
Winchester PDX1 120-gr. Split Core HP	2341	1.00	0.77

Note: Velocities were measured with a Competitive Edge Dynamics M2 chronograph. All groups were fired in 10-14 mph wind.

“ The only traditional AR-style control you’ll find on this rifle is the two-position safety...



▲ Magazines are inserted by pivoting them into place around a steel support pin inside the front end of the magazine well. This allows the gun to use steel AK magazines without damaging the aluminum mag well.



▲ You won't find a traditional AR magazine release button on the MK47. Rather, it uses an ambidextrous paddle-style magazine release that proved easy to manipulate.

of the box. The rifle did not object.

Tested ammo included Federal's 123-grain Fusion load and Hornady's 123-grain SST round, along with Winchester's interesting new 120-grain PDX1 Split Core HP home-defense load.

With this bullet, the rear two-thirds of the lead core is chemically bonded to the jacket, but the front third is not, allowing for both rapid expansion and good penetration.

Average velocities for these three loads were quite close, ranging from 2,341 fps to 2,383 fps. Surprisingly, given the Mutant's

16.1-inch barrel, velocities were also very close to factory-stated velocities, varying from 24 fps slower than advertised to 33 fps faster. Such a small amount of variation is, in practical terms, meaningless.

Recoil was only slightly more noticeable than with an AR-15, and the muzzle brake kept muzzle rise to a minimum. With the supplied 30-round AK PMAG magazine, you can burn through ammo in a hurry.

For testing, I mounted a Leupold Mark AR Mod-1 3-9X40mm scope into a rock-solid Burris PEPR mount. This combination has

served me well in the field and at the bench, and it's pretty much my go-to setup when I need to test AR-type rifles for accuracy.

I may choose to put red dot sights or other types of optics on the guns later, but this scope/mount combination helps me wring maximum accuracy out of a given rifle with minimum fuss.

■ ACCURACY

Accuracy testing proved to be challenging due to the rifle's heavy single-stage, mil-spec style trigger, which broke at an average of 5



▲ The author put a couple hundred rounds through the Mutant, with no prior cleaning or lubrication, and the gun functioned flawlessly.

pounds, 10 ounces. While it's possible to shoot tight groups with this trigger, it's not easy.

For a couple hundred dollars more, CMMG will sell you an up-graded version of the rifle, the MK47 AKM2, which comes with a Geissele SSA trigger, but it's no great challenge to replace the mil-spec trigger with a trigger of your choosing. If the rifle were mine, it's the first thing I'd change.

Despite the heavy trigger, the rifle delivered on its fundamental promise of providing the accuracy of an AR with reliability of an AK.

The PDX1 load delivered one-inch average groups, while the Federal Fusion load was close behind with average groups of just 1.15-inches. The steel-cased Hornady SST round produced 1.5-inch average groups, which is perfectly

acceptable for a hunting load.

Two out of the three loads produced sub-MOA best groups. That's not bad at all for a cartridge that was originally intended to shoot "minute of man" at 100 yards, and there is absolutely no doubt in my mind that groups would tighten up a bit more with a better trigger installed.

■ NET RESULT

Zeroed three inches high at 100 yards with any of the loads tested, you can still hold dead on the vital zone of a whitetail deer or hog out to 200 yards.

For hunters who seldom shoot at greater distances, the MK47 Mutant and the 7.62x39 cartridge will help you put meat on the table and defend the homestead in admirable fashion. **GW**

CONTACT

Burris Optics
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Bronzed **BEAUTY**

Text & Photos by Brad Fitzpatrick

TriStar has been making affordable, eye-catching guns for years, but the Viper G2 Bronze takes the brand to a new level



I've often heard that the critical first step to solving a problem is admitting that you have one, so here goes: I like fine firearms. I like guns with exceptional walnut stocks, sleek, stylish lines, excellent fit and finish, and unflappable operating systems. My affection for fine firearms is not the real affliction, though. My problem is that guns of this ilk cost a lot of money, and I don't have a lot of money, so I don't have a lot of nice firearms. It's a very frustrating situation, you see.

The Viper comes to the shoulder easily, balances well, and goes boom every time you pull the trigger—even with light ammo. It also looks good on the range or in the field.



▲ The Viper is a great clays gun, and it has the classic look of a high-end semiauto without the high-end price tag. Odds are it is going to be one of TriStar's most in-demand shotguns.

To their credit, gun companies have done a very good job of producing very good guns at reasonable prices over the last few decades. If you are looking for a cut-rate bolt-action rifle there are several from which to choose, and some of the guns, like the Weatherby Vanguard, even offer a sub-MOA guarantee.

In addition, the rise in popularity of concealed carry permits has prompted handgun manufacturers to develop lightweight, compact, reliable pistols that are reasonably priced, and this new competition has been a gain for shooters who are trying to stretch their dollar. There are a number of good, cheap shotguns, particularly if you are willing to shuck

your own empties. It's harder to find a good, reliable semiauto scattergun for a reasonable price, let's say under \$800. But you can't expect too much at that price point, right?

TriStar has set out to reshape opinions about budget shotguns. Their popular semiauto shotguns, known as the Viper G2 line, are built in Turkey and provide excellent reliability at a surprisingly low price point. If you still cling to the notion that Turkish guns are not reliable, believe me, it's time to abandon such generalizations. Indeed, there are some very good shotguns that are quite affordable coming out of the country, and many of those have the TriStar name on them.

■ THE VIPER SYSTEM

At the heart of the G2 Viper is a gas operation system utilizing a piston that controls escaping gases. These gases help move the piston and the dual action bars that operate the gun. The basic concept has been around in one form or another for decades, and although the hardware differs the engineering and the physics remain similar in guns that use this system.

It's often been said that gas guns "reduce" recoil; in fact, the recoil energy is simply stretched out over a longer period of time and thus felt recoil figures are lower. The gas system of the Viper G2 Bronze worked extremely well for me. I did



▲ The TriStar name has always been associated with value-priced guns, but the Viper G2 Bronze adds a look never before seen from these semiautos. Rather than dressing up a cheap gun, the company incorporated a reliable gas system and ultimately built a shotgun that looks and shoots like it costs a lot more than it does.

not “break the gun in” with some type of heavy loads but rather challenged the Viper G2 Bronze right away with a case of Winchester AA 7 ½ shells.

For this bronzed beauty to be successful it must first be reliable, and the gas system should be able to handle light loads because that’s what most shooters will be firing through this gun. Sure, the Viper has a 3-inch chamber, but the overwhelming majority of field gun owners only fire the least expensive off-the-shelf ammunition they can find. For that reason, I test each shotgun with light target loads. I blew through a half-case of AAs in a hurry, shooting hand-tossed and machine thrown clays in rapid succession.

The Viper went through 250 rounds without faltering, and between the waffle recoil pad and the

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▲ The Viper's receiver is treated with a Cerakote Bronze finish. Not only is it attractive, the Cerakote finish protects the receiver from corrosion and damage.

⦿ SPECIFICATIONS

TRISTAR VIPER G2 BRONZE

Action: Gas-operated semiautomatic

Caliber/Gauge: 12-gauge (tested), 20-gauge

Capacity: 5

Weight: 6.8 pounds (12-gauge)

Barrel Length (inches): 28, 26

Length: 46.5 inches

Choke: 3 (IC, M, F)

Finish: Cerakote Bronze

Stock: Semi-Gloss Turkish Walnut

MSRP: \$759

gun's heft (it weighs just under 7 pounds), recoil was manageable. TriStar says that the gun has endured 5,000-round torture tests, which is far more shooting than most do in a lifetime. Still, it is good to know that a gun has been put through the paces. Additionally, TriStar backs the gun with a five-year warranty.

■ BALANCE OF POWER

I am a firm believer that a well-balanced gun that fits the shooter properly has already helped the shooter bypass lots of frustrating misses. The Bronze balances well, with the weight centered just at the front of the action. This gives the gun a "between the hands" feel that so many gun writers and shooters praise. If the weight is too far back the gun feels "whippy" and



▲ The large bolt release button is located on the right side of the gun and it's easy to find and manipulate. The lifter acts as a magazine cutoff so you can easily unload the Viper's chamber without emptying the magazine.

doesn't swing smoothly. Too much weight toward the front of the gun levels out the swing but produces a sluggish character that bird hunters hate. The Viper G2 Bronze keeps the weight properly balanced.

A large bolt release button is located on the right side of the receiver, and elevating the lifter while opening the action works like a magazine cutoff switch, allowing you to quickly unload the chamber for safe and easy fence-crossings. Total capacity is five, but the plug in the magazine reduces overall capacity to three. Removing the plug is simply a matter of unscrewing the magazine cap and removing the plastic insert.

The Viper comes with three choke tubes in improved cylinder, modified, and full, which will cover the bulk of shots you will ever take with this gun. The TriStar can also



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▲ The attractive TriStar Viper looked good alongside the spectacular vistas of the Valley of the Kings in Emery, Utah.

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▲ It's hard to believe that this type of wood comes on a gun with an MSRP below \$800, but TriStar has found a way to make it happen. The fire and flame in the Turkish walnut stock give the Viper G2 Bronze a classic (and expensive) look. Note the waffle pad and slightly radiused heel, which absorb recoil and prevent hangups when mounting the gun.

accept Beretta/Benelli Mobile Thread chokes, which are pretty easy to find and are available in a variety of constrictions.

The red fiber optic bead on the front of the matte vent rib barrel is bright and easy to see even in low light conditions. For those who like to mount an optic on their shotgun, the receiver is milled to accept bases. That feature is probably a holdover from other TriStar Viper designs that are more commonly used for defense, turkey and big game hunting, but even if you never mount an optic on the gun it's nice to have the option.

The TriStar's crossbolt safety is located just behind the trigger, which is a convenient and popular positioning. Currently the Viper G2 Bronze is available in 12- and 20-gauge with 28- and 26-inch barrels. The 12-gauge version weighs just

under 7 pounds depending on wood density, and the 20-gauge model weighs around 6 pounds.

■ FETCHING FINISH

Two things catch your eye about this gun immediately. The first is the distinctive Cerakote Bronze finish, which is classy and extremely durable. The second feature that draws your attention (and the first thing that most people who see this gun comment on) is the glossy Turkish walnut stock. It looks like very expensive wood, so much so, in fact, that I removed the recoil pad and wasn't convinced that the Viper Bronze hadn't been treated with some type of laminate until I scraped the walnut myself and saw it fall into my hand.

These guns are made in Turkey — obviously the source of Turkish walnut — but they have a stock that

belies their price tag. The stock finish is so glossy that it was very tough to get photos without perfect lighting because the glass-smooth finish reflected any available light. The checkering is pretty good, and the slab-sided feel of the forearm and pistol grip are comfortable and make the gun easy to maneuver.

The weathered wooden gun rack at my shooting club has held a number of high-priced scatterguns, and anything new draws attention. I propped the Viper Bronze up as bait and waited while I poured a cup of coffee, and in short order a couple of shooters made their way up to check out the new gun. One asked if he could pick it up. I blew steam off the coffee cup and nodded. They studied the gun for quite some time, checking out the classy lines, the shimmering bronze receiver and that gorgeous wood.

"Wait," one of the guys said, "this is a TriStar?"

“The Bronze
balances well, with the
weight centered just at
the front of the action.



▲ Even the magazine cap gets the Cerakote treatment. Under the cap there's an easy-to-use plug that can be removed for additional magazine space.

BROWNING TRAPPER CREEK MESH SHOOTING VEST

It's tough to find a shooting vest that comfortably supports all your shells and gear yet is light and comfortable enough to wear in warm weather, but the Trapper Creek vest from Browning fits the bill. Four large pockets up-front hold all the shells you'll need for a couple rounds of skeet or a long dove hunt, and the rear pockets hold your birds or empty hulls. The shooting patch is made from 100% garment washed cotton twill, and the lightweight mesh design is very comfortable even on the hottest days. Realtree camo helps you blend in so passing doves won't spot you, and the sewn-in REACTAR G2 pocket comfortably holds a recoil-absorbing REACTAR pad to help reduce recoil fatigue (G2 pad sold separately). If you enjoy upland hunting or shotgun sports (or both) the Browning Trapper Creek vest is durable and comfortable.




MSRP is \$70.00. For more information, visit www.browning.com

■ A NICE SURPRISE

So despite that fact that it comes from a company with a reputation for putting out budget guns, the Viper G2 Bronze is an aesthetically nice surprise. But it's also a very functional gun that is extremely well balanced and reliable. It performed perfectly on the skeet range, swallowing up AAs with ease and spitting out empties with authority. The gas system helps make recoil manageable, and the weight is about right. A lot of field guns are light enough to carry all day, but that trim styling doesn't translate well to a sporting gun that you might fire 150 times a day.

In contrast, a heavy target shotgun is easy on the shoulder, but it may weigh 8 or more pounds in 12-gauge, a heavy burden when you're hiking all day in search of a few chukar or pheasants. The Viper plays the middle ground. I can say with certainty that it is a clay-crush-



ing machine, and even though there were misses along the way, if I did my part the Viper did its job perfectly. And it looked good doing it.

The interior of the receiver is a bit rough in a couple places and has a few machining marks, and the trigger, while functional, is a little heavy and gritty. Otherwise, the gun is a stunner and performs very well. I didn't have the gun during hunting season, but I just may have my own Viper Bronze when the weather starts to cool.

The 20-gauge version with a 26-inch barrel would be fantastic for doves, quail, and rabbit hunting, and if I were heading to the Dakotas to chase rooster pheasants, or if I thought I might want to use the gun for sporting clays or maybe the occasional duck blind sit, I'd opt for the 12-gauge.

Either way, I think you'll like what you get. I still shake my head when I realize that this gun has an MSRP of \$759. Seems impossible. But if you're like me and you want a gun that is reliable enough for extended shooting sessions with light loads and looks far more expensive than it actually is, then the Viper Bronze might be just what you're after. It's a feature-packed gun that's priced to compete with the big boys. **GW**

▲ The checkering on the Viper G2 Bronze is good, and the flat sides of the forearm are comfortable to hold and offer great control of the muzzle. The balance point is where it should be, giving the Viper a between-the-hands feel.

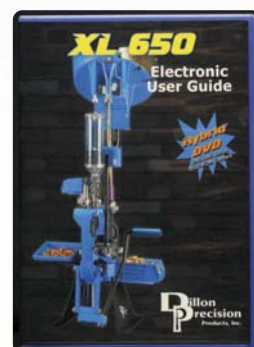
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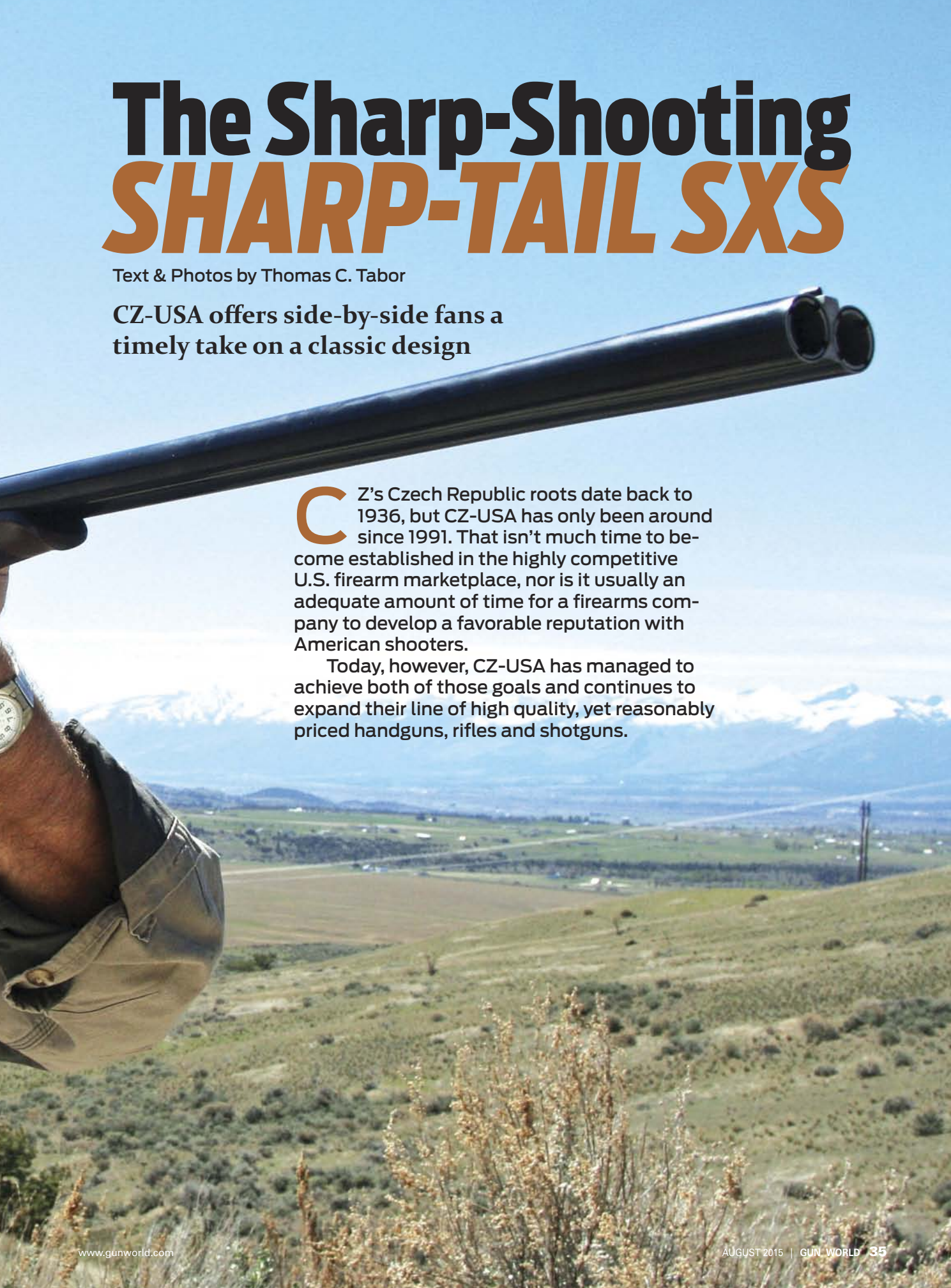


Tom ran the new CZ-USA Sharp-Tail side-by-side shotgun through its paces shooting clay targets.

The Sharp-Shooting *SHARP-TAIL SXS*

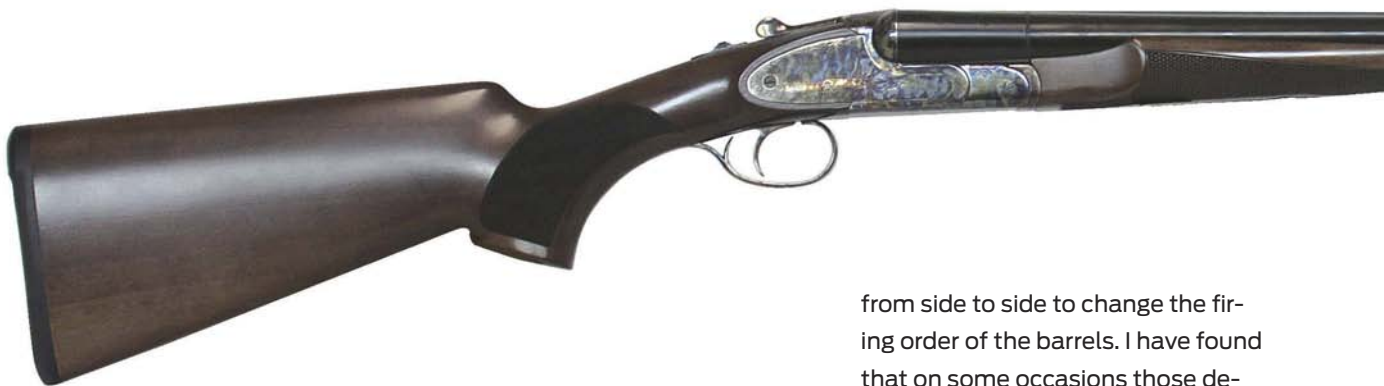
Text & Photos by Thomas C. Tabor

CZ-USA offers side-by-side fans a timely take on a classic design



CZ's Czech Republic roots date back to 1936, but CZ-USA has only been around since 1991. That isn't much time to become established in the highly competitive U.S. firearm marketplace, nor is it usually an adequate amount of time for a firearms company to develop a favorable reputation with American shooters.

Today, however, CZ-USA has managed to achieve both of those goals and continues to expand their line of high quality, yet reasonably priced handguns, rifles and shotguns.



■ GUN LUST

At the most recent Las Vegas SHOT Show, I was drawn to CZ's new Sharp-Tail side-by-side like coyotes are drawn to my neighbor's free-ranging chickens.

My own interest in multiple barreled firearms is a genuine love affair, and I'm particularly fond of those that have been joined at the hip like this fine CZ side-by-side. Unfortunately, my attendance at the SHOT Show never provides enough time to conduct a thorough evaluation of any new product.

To satisfy my urge for a closer look once I returned home, I placed an order with CZ-USA and a few months later a new 20-gauge Sharp-Tail side-by-side arrived to take up residency.

■ DOUBLE DESIGNS & THE SHARP-TAIL

Although side-by-side shotgun designs may appear similar, they frequently contain internal variations, such as the type of hammer springs used.

Many double-barreled shotguns come equipped with leaf style hammer springs. Some shooters feel that this type of spring improves the performance of the trig-

ger, but others believe that leaf springs are more susceptible to breakage and are harder to replace than coil springs.

While I am confident that most shooters couldn't tell the difference in performance of a coil versus a leaf spring in any shotgun, the longer service life of the coil spring certainly is a positive characteristic in my view. And I believe that is why CZ opted to use coils when they designed their Sharp-Tail shotgun.

It's common on older guns, or guns paying homage to ancient designs, to find two triggers on a double-barrel shotgun – one trigger for each barrel. Around the turn of the 20th century, new single trigger designs began to appear, evolving to include both a non-selective single trigger design, which fires in a preset barrel order established by the manufacturer, as well as a single-selective trigger design that allows the shooter to select whichever barrel they prefer to fire first.

The Sharp-Tail's trigger favorably falls in this latter category with the barrel selector conveniently located on top of the tang-mounted safety. A common design found on many similar shotguns requires the shooter to actually move the safety

from side to side to change the firing order of the barrels. I have found that on some occasions those designs do not move as freely as I would prefer.

CZ took an entirely different approach in their barrel selector design. Although the selector lever is located on top of the safety, it moves independently and is a completely separate mechanism from





▲ The CZ Sharp-Tail blends old world charm with modern features to produce a great 21st century field gun.

the safety, which, to me, seems to encourage smoother and more positive movements.

After the first barrel of a double has been fired, there are two different designs used to automatically switch the firing mechanism over to the second barrel. In some cases, the recoil of the firearm results in shifting this apparatus, but if barrel #1 fails to fire, barrel #2 won't fire, either.

The other design relies on a mechanical mechanism to switch over to the second barrel. In this case, even if the first barrel fails to fire, the second barrel can be fired by simply pulling the trigger again. This design is commonly considered superior and more reliable than the recoil operated systems and is incorporated into the CZ Sharp-Tail.



▲ The CZ Sharp-Tail comes packed in a durable form-fitted plastic case. The blue velour material used to protect the Sharp-Tail provides a nice added touch.



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▲ The forearm stock came in a semi-beavertail design with checkering and a slight flare on the end.

SPECIFICATIONS

CZ SHARP-TAIL

Chambering: 20-Gauge

Max. Shell Length: 3 inches

Barrel Length: 28 inches

Chokes: 5 Flush Interchangeable

Stock: Turkish Walnut

Length of Pull: 14.5 inches

Forend Style: Semi-Beavertail

Receiver Finish: Color Case Hardened

Barrel Finish: Black Hard Chrome

Ejector/Extractor: Extractor

Rib: Raised

Overall Length: 45.75 inches

Weight: 6.3 pounds

Comb: 1.5 inches

Heel: 2.25 inches

Trigger Mech: Single Selectable

Safety: Manual

MSRP: \$1,022.00

There are also two typical means of removing fired shells from the chambers: spring-loaded ejector systems to kick the fired hulls free of the chamber when the action is opened or extractors that lift the shell out of the chamber just enough remove with one's fingers.

To simplify manufacturing and to keep pricing reasonable, CZ opted for extractors over ejectors, so you won't have to chase empties as they fly out of the gun. In fact, I've known of some trap shooters who disabled the ejectors just so they don't have to chase after their flying empties.

■ SMART DESIGN

In addition to having a selectable trigger, coil spring operated hammers and extractors, the Sharp-Tail comes with a one-piece CNC machined receiver, independent floating firing pins and newly designed sears, all of which the company feels combine to produce a longer life expectancy and greater overall consistencies.

The Sharp-Tail is built around a newer, more compact action. On all CZ shotguns, including the Sharp-Tail, the company builds each on its own specific frame, sized to match that particular gauge. In other

words, the frame of a 20-gauge is scaled back in size compared to that of the 12-gauge, the 28-gauge frame is a bit smaller overall than that of the 20-gauge and a .410 frame is smaller than the 28-gauge. This is an important feature very worthy of consideration, particularly when considering one of the smaller gauges.

The logical question would be why anyone would want to shoot, for example, a 20-gauge or 28-gauge if it were sized the same as a 12-gauge. In this case there would be little advantage in shooting the smaller gauge.

The 20-gauge Sharp-Tail comes with 28-inch black hard-chrome barrels equipped with flush style choke tubes, of which five are supplied with each gun (Full, Improved Modified, Modified, Improved Cylinder and Cylinder).

The choke designations are indicated on each choke tube in the form of tiny notches, which can be seen even when the choke has screwed into place. A single notch indicates full choke, two notches means it is choked improved modified, three means modified, etc.

The Sharp-Tail stock is made of Turkish walnut and is nicely checkered on the pistol grip and forearm.

The metal works is finished in a nice combination of gloss bluing and vivid case hardened colors and comes with a modest amount of metal engraving.

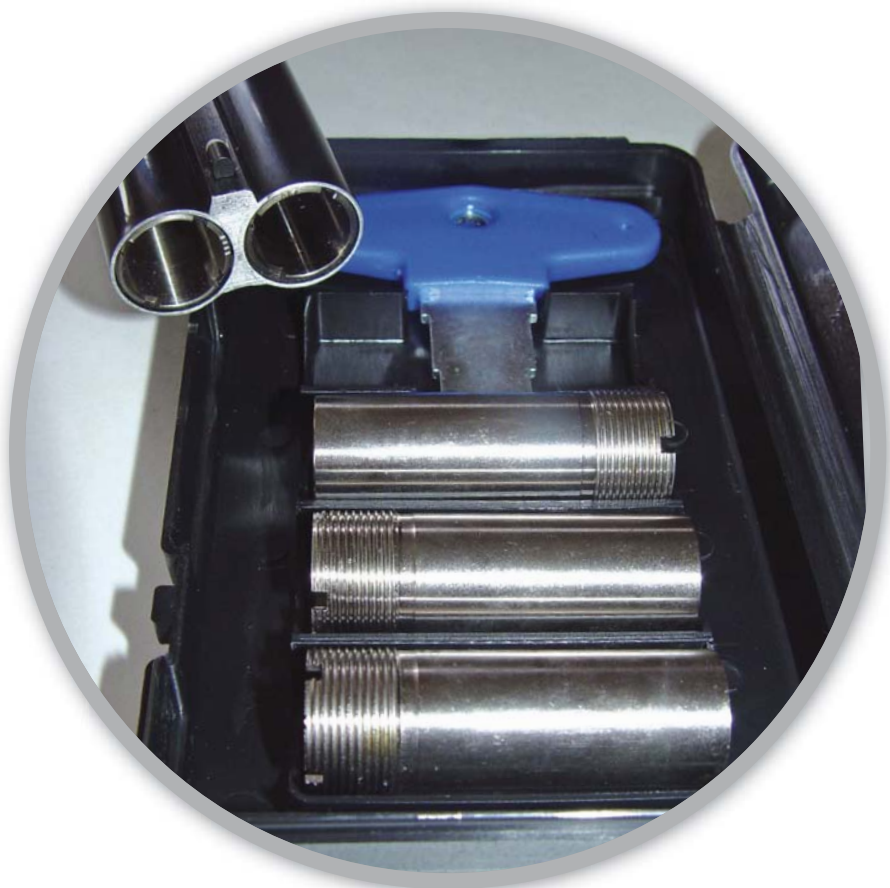
The rib is raised, but not ventilated, and the safety is manually operated, which I personally prefer to an automatic design. I found that the barrels were mono-blocked, which is a common design on many of today's double-barreled firearms. The locking mechanism consisted of a set of dual sliding blocks, which appears to be very strong and reliable. And to top it off, the Sharp-Tail comes in a very nice form-fitted hard plastic case.

The Sharp-Tail is actually built in Turkey by Huglu Hunting Firearms

Cooperative for CZ-USA. Huglu is well known both here in the United States as well as in Europe. In addition to the shotguns supplied and sold under the CZ logo, Huglu produces and sells a variety of fine shotguns under their own name.

■ EASY ON THE EYES

The wood on most CZs, including this one, is not often what I would refer to as "elegant." In many cases, it lacks a significant amount of contracting grain pattern, but when it comes to strength, it is very good with the grain running properly through the pistol grip and other areas. I've never seen any CZ



▲ Included with each Sharp-Tail shotgun are five removable flush-mounted chokes (Full, Improved Modified, Modified, Improved Cylinder and Cylinder) along with a wrench and a storage case.

CZ SCORPION EVO 3 S1 PISTOL



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ON AMMO.



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▲ Tom found that the patterns produced by the CZ Sharp-Tail were even and consistent with the choke designations.

stock wood containing any of the lesser desirable sapwood.

The finish on the Sharp-Tail stock appeared to be a hard, semi-gloss, non-oil type spray-on product which seemed to be quite durable and weather resistant. I would characterize the overall appearance as a rather pleasant blend of old classic styling coupled with some enhanced but subtle modern world improvements.

The buttstock is straight with only a 2.5-inch drop at the heel, which favors less abusive recoil and the 14.5-inch length of pull should fit most adult shooters.

The forearm is a semi-beaver-tail design with a tip that flares out slightly. The thin 1/2-inch black recoil pad was functional and matched the general appearance of the gun nicely. The weight of the 20-gauge was a moderate 6.3

pounds with the factory indicating that both the .410 and 28-gauge are a little lighter at 5.9 pounds.

The field model 12-gauge weighs 7.3 pounds and the Target Model 12-gauge is slightly heavier at 7.5 pounds.

All of the metal surfaces with the exception of the barrel, safety and barrel selector were case hardened with brilliant coloration throughout. Those remaining parts

PERFORMANCE:

CZ SHARP-TAIL 20-GAUGE PATTERNING WINCHESTER DOUBLE A - SUPER SPORT 2-3/4", 7/8-OUNCE, #7-1/2, 1,300 FPS

Number of Shot	40-Yards Full	40-Yards Modified	30-Yards Improved Cylinder
Within 20-inch Circle	146	136	90
Percentage in 20 inches	51%	48%	32%
Within 30-inch Circle	226	192	177
Percentage in 30 inches	79%	67%	62%

Note: While many charts indicate that there are 306 #7-1/2 pellets contained in a 7/8-ounce load, an actual count of the number of shot within one of the Winchester Double A - Super Sport shells indicated that there were 285. Variations like this are common due to a couple of things. First, most shot charges are measured in volume rather than weight, both when loaded at the factory and by a handloader. Second, there will some variation in weight based on the amount of antimony and other components contained in the lead.

that weren't case hardened were nicely blued with a high gloss finish.

The barrels came with a single white plastic bead on the rib at the muzzle. Side lock panels were present, but were not functional in the true sense of side lock construction. In reality, the Sharp-Tail is of a box lock design with side lock panels added solely for the sake of appearance. And the metal to wood inletting was well done with no major gaps present.

■ SWINGIN'

The Sharp-Tail 20-gauge handled very nicely and came to my shoulder each time precisely in the same manner. It swung smoothly and handled very well. The 28-inch barrels seem to be well matched to the gun overall, providing a balance point that's exactly where it should be: precisely at the hinge point.

Like most new doubles fresh out-of-the-box, I found the action to be very tight, but it will obviously loosen up a bit over time. To me, the sound produced by a double upon closing is frequently indicative of the overall quality of the firearm. For that reason I always listen carefully for the audible sounds as the cross bolts and bars lock into place. If those sounds are strong and resonating I take that as an indicator of good quality, strength and close tolerances, and in this case the Sharp-Tail clearly met that goal.

I also found that both the safety and barrel selection features moved smoothly and without any signs of unwanted resistance or hesitancy in their movements.

After becoming accustomed to and checking out the usual features, I decided to test the trigger pull before taking the Sharp-Tail for

a workout. Using my Lyman trigger pull gauge I first checked the left barrel, which came in with an average of five pulls to be 5 pounds, 3.5 ounces. The right barrel had a slightly lighter pull weight at 4 pounds, 13.3 ounces. Although I did notice a little slack in the trigger before it reached the sear engagement point, but after that there was little to no detectable creep or slop in its movements.

■ DETECTING A PATTERN

Unfortunately, my Sharp-Tail shotgun arrived a few months after the end of typical bird season. That limited my abilities somewhat on the feathered scene, but a few flocks of English starlings made the mistake of invading my backyard, which provided some opportunity to put a little lead to feathers.

As the first flock passed sharply to my left, the right barrel ended one bird's life very effectively, followed by the left barrel sending another to the ground.

The next evening and the days to follow produced several more opportunities to take doubles, and that inspired me so much I told my wife maybe I should simply retire the CZ and tell everyone that that gun simply never misses.

When my shipment of Winchester shotshells arrived, I headed out to see first how the barrels were patterning. Of the five chokes that came with the Sharp-Tail, I patterned the three most commonly used ones: the full and modified at 40 yards and the improved cylinder at 30 yards. I found the patterns of all three to be typical of those chokes and I found that the pellets were spread evenly throughout their patterns. The results of that

patterning can be found in the accompanying table.

After my patterning activities were completed, I turned my attention to some clay target shooting. I like the performance of Winchester AA trap and skeet shells, which usually zip along at about 1,200 fps; however, I decided to run a batch of AA Super Sport 7/8-ounce 1,300 fps shells through the Sharp-Tail.

In order to cover as broad a range of testing as I could, I also added a variety of other Winchester shotshells, including Blind Side 3-inch steel shells, Double X 3-inch turkey loads and Super X 2-3/4-inch 1-ounce loads in a variety of shot sizes.

All ammo performed very well, and in so doing they not only made life miserable for the starling population, but they turned my clay targets into puffs of powdery dust.

■ BOTTOM LINE

I like the CZ Sharp-Tail's looks, fit, finish and function. Priced at just over a grand retail, it seems like a fine tool not only for me, but for budding shooting sports enthusiasts as well.

Sometimes, you really do get what you pay for. **GW**

CONTACT

CZ-USA
800-955-4486
CZ-USA.com

Winchester Ammunition
800-356-2666
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JANTZ - USA AT K

JANTZ USA MADE BLADES

Jantz Blades are the highest quality pre-shaped blades available anywhere.
Each of these hollow ground blades are designed by our team and crafted 100% on site at our facility.

Oyster Blade



The back is flat.

Designed with beauty and usability in mind, the rounded and ground tip is perfect for shucking oysters practically and safely. Cryogenically treated and razor sharp. Overall length 6 3/4", blade is 2 1/4" x 1.04" wide, .100" thick. Handle Holes 3/16".

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J1008	440C	Satin	Cryo	57-58	29.95
J1089	Damascus	Etched	Cryo	58-60	49.95

Pattern 35



Overall length 6 5/8", blade is 3" x 3/4" wide, 1/8" thick. Handle Holes 3/16", Thong Hole 3/16".

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J3508	440C	Satin	Cryo	57-58	32.95
J3528	D2	Satin	Cryo	59-61	32.95
J3558	CPM 154	Satin	Cryo	59-60	39.95
J3589	Damascus	Etched	Cryo	58-60	49.95

Large Caper



Overall length 7 3/4", blade is 3" x 3/4" wide, 1/8" thick. Handle Holes 3/16".

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J8258	CPM 154	Satin	Cryo	59-60	34.95
J8289	Damascus	Etched	Cryo	58-60	59.95

Small Caper



Overall length 5 1/8", blade is 2" x 1/2" wide, .100" thick. Handle Holes 1/8".

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J8158	CPM 154	Satin	Cryo	59-60	29.95
J8189	Damascus	Etched	Cryo	58-60	29.95

Jantz Blades are the highest quality pre-shaped blades available anywhere.

The two blades below are only a portion of our flat ground **Jantz** Blades. Designed and crafted 100% on site at our facility.

Pattern 31



Pattern 31 is flat ground and has optimal edge holding capability. Overall length 7 5/8", Blade Length 3", width 1 1/8", thickness 5/32". Bolster holes 1/8", Handle Holes 1/4", Thong Hole 1/4".

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J3127	D2	Peened	Cryo	59-61	31.95
J3128	D2	Satin	Cryo	59-61	31.95
J3147	154CM	Peened	Cryo	58-59	35.95
J3148	154CM	Satin	Cryo	58-59	35.95
J3198	1095	Satin	Cryo	57-58	24.95
J319K	1095	Black	Cryo	57-58	24.95
J3189	Damascus	Etched	Cryo	58-60	79.95

Pattern 65



Overall length 8 7/16", blade is 3 1/2" x 1 1/8" wide, 5/32" thick. Handle Holes 3/16", Thong Hole 3/16".

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J6508	440C	Satin	Cryo	57-58	39.95
J6528	D2	Satin	Cryo	59-61	39.95
J6589	Damascus	Etched	Cryo	58-60	99.95

Pattern 51



Similar to our Pattern 31 with a full hollow grind. Cryogenically treated and razor sharp. Overall length 7 5/8", blade is 3" x 1 1/8" wide, 5/32" thick. Bolster Holes 1/8", Handle Holes 1/4", Thong Hole 1/4". See online for accessories.

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J5108	440C	Satin	Cryo	57-58	34.95
J5128	D2	Satin	Cryo	59-61	34.95
J5148	154CM	Satin	Cryo	58-59	39.95
J5178	CPMS 90V	Satin	Cryo	56-59	99.95
J5189	Damascus	Etched	Cryo	58-60	99.95

Pattern 52



Similar to our Pattern 22 with a full hollow grind. Cryogenically treated and razor sharp. Overall length 8 3/8", blade is 3 1/2" x 1 3/32" wide, 5/32" thick. Bolster Holes 1/8", Handle Holes 1/4", Thong Hole 1/4". See page online for accessories.

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J5208	440C	Satin	Cryo	57-58	39.95
J5228	D2	Satin	Cryo	59-61	39.95
J5289	Damascus	Etched	Cryo	58-60	99.95

Pattern 61



Pattern 61 is flat ground and has optimal edge holding capability. Overall length 7 3/4", Blade Length 3 1/4", width 1 1/4", thickness 9/64" (.140"). Bolster holes 3/32", Handle Holes 3/32" and 3/16", Thong Hole 1/4".

CAT.#	STEEL	FINISH	TEMPER	HRC	PRICE
J6127	D2	Peened	Cryo	59-61	32.95
J6128	D2	Satin	Cryo	59-61	32.95
J6107	440C	Peened	Cryo	57-58	32.95
J6108	440C	Satin	Cryo	57-58	32.95
J6157	CPM154	Peened	Cryo	59-60	44.95
J6158	CPM154	Satin	Cryo	59-60	44.95
J6189	Damascus	Etched	Cryo	58-60	89.95

Kirinife HANDLE MATERIAL

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CAT.#	THICK	PRICE
K1815	1/8"	10.95
K1315	3/16"	15.95
K1415	1/4"	19.95

Desert Camo



CAT.#	THICK	PRICE
K1802	1/8"	8.95
K1302	3/16"	9.95
K1402	1/4"	14.95

Lava Flow



CAT.#	THICK	PRICE
K1804	1/8"	8.95
K1304	3/16"	9.95
K1404	1/4"	14.95

Red Pearl



CAT.#	THICK	PRICE
K1808	1/8"	8.95
K1308	3/16"	10.95
K1408	1/4"	13.95

Green Pearl



CAT.#	THICK	PRICE
K1810	1/8"	8.95
K1310	3/16"	10.95
K1410	1/4"	13.95

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Patriot



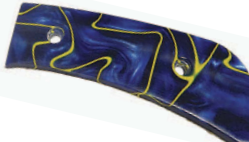
CAT.#	THICK	PRICE
KI1801	1/8"	8.95
KI1301	3/16"	9.95
KI1401	1/4"	14.95

Toxic Green



CAT.#	THICK	PRICE
KI1803	1/8"	8.95
KI1303	3/16"	9.95
KI1403	1/4"	14.95

Royal Pearl



CAT.#	THICK	PRICE
KI1807	1/8"	8.95
KI1307	3/16"	9.95
KI1407	1/4"	14.95

Black Pearl



CAT.#	THICK	PRICE
KI1806	1/8"	8.95
KI1306	3/16"	10.95
KI1406	1/4"	13.95

Blue Pearl



CAT.#	THICK	PRICE
KI1809	1/8"	8.95
KI1309	3/16"	10.95
KI1409	1/4"	13.95

All steel offered below by JANTZ is made in the USA. Visit www.knifemaking.com to purchase other widths and thicknesses.

CPM® S110V® Stainless Steel

CPM S110V is a high alloy martensitic stainless tool steel. Offers better corrosion resistance than 440C or CPM S90V. Aim hardness is 58/61. Typical chemistry C 2.8, Nb 3.0, Cr 15.25, V 9.00, Mo 2.25, Co 2.5.

18" Steel

CAT#	THICK	WIDE	FINISH	PRICE
QF118	1/8"	1 1/2"	MILL FINISH	\$ 65.95
QF658	5/32"	2"	MILL FINISH	\$ 98.95
QF718	3/16"	1 1/2"	MILL FINISH	\$ 86.95
QF728	3/16"	2"	MILL FINISH	\$113.95

36" Steel

CAT#	THICK	WIDE	FINISH	PRICE
QF136	1/8"	1 1/2"	MILL FINISH	\$129.95
QF656	5/32"	2"	MILL FINISH	\$195.95
QF716	3/16"	1 1/2"	MILL FINISH	\$171.95
QF726	3/16"	2"	MILL FINISH	\$225.95

CPM® 20-CV Tool Steel

CPM 20CV is a martensitic stainless steel with exceptionally good wear resistance and outstanding corrosion resistance. Aim for hardness is 58-59Rc. CPM 20CV is a registered trademark of Crucible Industries LLC.

Typical chemistry: C 1.9, Cr 20.0, V 4.0, Mo 1.0, W 6.

18" Steel

THICK	WIDE	MILL FINISH	BLANCHARD	PRECISION
1/8"	1 1/2"	TF218 - \$ 36.95	TU218 - \$ 42.95	TG218 - \$ 48.95
1/8"	2"	TF228 - \$ 44.95	TU228 - \$ 52.95	TG228 - \$ 60.95
5/32"	1 1/2"	TF318 - \$ 48.95	TU318 - \$ 54.95	TG318 - \$ 60.95
5/32"	2"	TF328 - \$ 65.95	TU328 - \$ 73.95	TG328 - \$ 81.95

36" Steel

THICK	WIDE	MILL FINISH	BLANCHARD	PRECISION
1/8"	1 1/2"	TF216 - \$ 72.95	TU216 - \$ 84.95	TG216 - \$ 96.95
1/8"	2"	TF226 - \$ 93.95	TU226 - \$109.95	TG226 - \$125.95
5/32"	1 1/2"	TF316 - \$ 90.95	TU316 - \$102.95	TG316 - \$114.95
5/32"	2"	TF326 - \$123.95	TU326 - \$139.95	TG326 - \$155.95

CPM® REX M4 High Speed Steel

CPM REX M4 HC(HS) is a special purpose high speed steel exhibiting better wear resistance and toughness. Also providing enhanced machinability and grindability. Aim hardness is 63/65. Typical chemistry: C 1.42, Mn .30, S .06, Cr 4.00, V 4.0, Mo 5.25, W 5.5.

18" Steel

CAT#	THICK	WIDE	FINISH	PRICE
JF428	3/16"	2"	MILL FINISH	\$ 52.95
JF518	1/4"	1 1/2"	MILL FINISH	\$ 52.95
JF528	1/4"	2"	MILL FINISH	\$ 70.95
JF548	1/4"	4"	MILL FINISH	\$134.95

36" Steel

CAT#	THICK	WIDE	FINISH	PRICE
JF426	3/16"	2"	MILL FINISH	\$103.95
JF516	1/4"	1 1/2"	MILL FINISH	\$103.95
JF526	1/4"	2"	MILL FINISH	\$139.95
JF546	1/4"	4"	MILL FINISH	\$268.95

CPM® D2 Carbon Steel

CPM D2 is an air-hardening, high carbon, high chromium tool steel, heat treatable to HRC 60-62. It offers excellent abrasion resistance. Machinable in the annealed condition and exhibits minimal distortion on hardening. Typical chemistry: C 1.50, Mn .40, Si .40, Cr 12.00, V .95, Mo .90.

18" Steel

THICK	WIDE	MILL FINISH	BLANCHARD	PRECISION
1/8"	1 1/2"	ZF218 - \$ 26.95	ZU218 - \$ 32.95	ZG218 - \$ 38.95
1/8"	2"	ZF228 - \$ 34.95	ZU228 - \$ 42.95	ZG228 - \$ 50.95
5/32"	1 1/2"	ZF318 - \$ 28.95	ZU318 - \$ 34.95	ZG318 - \$ 40.95
5/32"	2"	ZF328 - \$ 39.95	ZU328 - \$ 47.95	ZG328 - \$ 55.95
3/16"	1 1/2"	ZF418 - \$ 35.95	ZU418 - \$ 41.95	ZG418 - \$ 47.95
3/16"	2"	ZF428 - \$ 45.95	ZU428 - \$ 53.95	ZG428 - \$ 61.95

36" Steel

THICK	WIDE	MILL FINISH	BLANCHARD	PRECISION
1/8"	1 1/2"	ZF216 - \$ 51.95	ZU216 - \$ 63.95	ZG216 - \$ 75.95
1/8"	2"	ZF226 - \$ 65.95	ZU226 - \$ 81.95	ZG226 - \$ 97.95
5/32"	1 1/2"	ZF316 - \$ 55.95	ZU316 - \$ 67.95	ZG316 - \$ 79.95
5/32"	2"	ZF326 - \$ 75.95	ZU326 - \$ 91.95	ZG326 - \$107.95
3/16"	1 1/2"	ZF416 - \$ 66.95	ZU416 - \$ 78.95	ZG416 - \$ 90.95
3/16"	2"	ZF426 - \$ 86.95	ZU426 - \$102.95	ZG426 - \$118.95



GTC 440C stainless steel thrust ball bearings caged in stainless steel retainers developed by Gustavo T. Cecchini's GTC Knives to reduce friction and failures, increase opening time, and easier cleaning. The 100% stainless steel construction eliminates the problems of other thrust bearings that are not 100% stainless. Sold separately.

CAT.#	O.D.	I.D.	BALL DIA.	PRICE
GC101	.354"	.157"	.062"	1.29
GC106	.358"	.192"	.062"	1.29
GC111	.378"	.218"	.062"	1.29
GC121	.415"	.255"	.062"	1.29
GC102	.454"	.258"	.078"	1.29

Decorative Torx Screws for Pivot Pins

Designed and manufactured by JANTZ in our facility. Use with our threaded pivot barrels. 303 Stainless Torx head screw, .350" in length and threaded 6-48.



CAT.#	NAME	DIAMETER	TORX	PRICE
FF401	Spinner	1/4"	T6	2.49
FF402	Galaxy	1/4"	T6	2.49
FF403	Orchid	1/4"	T6	2.49
FF404	Turbine	1/4"	T6	2.49
FF271	Solar Flare	5/16"	T8	2.49
FF273	Gear	5/16"	T8	2.49
FF275	Bullseye	5/16"	T8	2.49
FF276	Cosmos	5/16"	T8	2.49
FF277	Texas Star	5/16"	T8	2.49

Threaded Pivot Only



Pivot barrels are threaded 6-48.

CAT.#	O.D.	LENGTH	FITS	PRICE
F85B	3/16"	.350"	1/4"	1.95
F88B	3/16"	.500"	1/4"	1.95
F96B	1/4"	.350"	5/16"	1.95
F98B	1/4"	.500"	5/16"	1.95

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JANTZ





The author fires the Battle Born carbine with the Weaver 1-3X scope and ARMS mount aboard.

A Slick and **ACCURATE AR-15**

Text & Photos by Paul Hantke

After serving the LEO market for years, Battle Born now offers its top quality rifles and carbines to the public



I'm sure my friend John Indell could hear the lack of interest in my voice when he called to suggest that I test and evaluate a Battle Born AR-15 rifle. Thinking back, I believe my exact words were, "Oh geez, John, not another AR-15."

Still, since Indell served with the Naval Special Warfare Group for years before opening his own shop, I have come to trust his opinion on all things firearms related, and I felt compelled to listen while he went on and on about the rifles and the people who produce them.

Of course, I had reason to listen with a shadow of a doubt. My experience with the AR-15 (M16) rifle dates back to 1969, and I have handled, fired, and thoroughly tested dozens of them over the years in addition to co-authoring a book on the subject.

But in the end, John won out. I agreed to get involved in a test, and as you can probably tell by the fact that I've written this review, I'm glad I did.



▲ The bolt is hard chromed for corrosion/rust resistance, lube retention, and easy cleanup.

LE RESOURCE

Battle Born is a custom manufacturing shop initially founded to provide AR-15 platforms to Law Enforcement (LE) agencies so the good guys are outfitted with the best arms available. The Battle Born AR-15 was conceived in 2008, with a focus on reliability, accuracy, overall high quality, and sensible pricing. After a few years of development, this was accomplished.

Extensive testing by the Reno Swat team against a number of other major brands resulted in the Battle Born AR being selected as part of their standard equipment because of its outstanding performance and reliability. It's also on the Reno Police Department's list of approved firearms.



▲ The Aimpoint CompM2 rides securely in the Global Defense Initiatives QD mount. The GDI gear is fairly new and guarantees a phenomenal 0.01 MOA return-to-zero.



CCP

EMPOWER YOURSELF

The Walther CCP™ houses our breakthrough Soft Coil™ technology. This translates into less felt recoil and consistent shot placement. We give you the assurance, that you can rely on Walther, no matter the situation. Something you should expect from the oldest name in personal protection.



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BUILT IN GERMANY





▲ The author takes a break from testing to load his California-compliant magazines, a process that takes a little less time than in other states.

After years of serving that niche market, the company decided to expand its scope and began supplying these top-quality rifles and carbines to the public.

■ NUTS & BOLTS

The heart of the Battle Born AR-15 rifle is a flattop receiver cut from a solid billet of 7075 aluminum housing, a direct gas impingement operating system, a hard-chromed bolt carrier group, and a fine two-stage trigger that lets off right around five pounds every time.

A 17.5-inch, M4 contour barrel with a 1:9 twist is attached to the billet receiver and terminates with an A2 muzzle brake on the rifle's business end.

The right side of the receiver features a brass deflector bump behind the ejection port and a forward bolt assist in keeping with the firearm's mil-spec configuration. I personally question the wisdom of mechanically jamming a round into the chamber once it has exhibited a problem feeding normally, but this situation is easily addressed by simply not using the forward assist.

The bolt release, magazine catch, and safety are all in the familiar places, although my rifle has the California compliant "bullet button" in lieu of a normal fixture.

At first glance, the safety might make your heart jump a bit as it has icons for Safe, Semi-Auto, and Full-Auto positions, but all the excitement goes away quickly when you discover that the Safety thumb lever is blocked and will only rotate to the Semi-Auto setting.

■ DIMENSIONS AND DETAILS

The 36-inch overall length of



▲ The author started with the group at the bottom and then 'walked' his shots to the X-ring using the 1-3 power Weaver scope set on 3X.

the carbine is reduced to 32.5 inches by compressing the Magpul buttstock, which does aid somewhat when handling the firearm in tight quarters. It's also helpful when you're wearing heavy clothing and/or body armor and a shorter length of pull is needed.

One issue with many folding or telescoping stocks is a very thin top surface that makes it pretty hard to get a proper and comfortable cheek weld when firing. This Magpul unit has a full-sized recoil spring tube that provides plenty of room to do so, and the stock locks securely in all six positions.

The pistol grip on this Battle Born carbine is also from Magpul. It features a hinged cap that locks tight to close the bottom of the hollow grip, providing storage space for emergency parts.

Made in USA 

MTUL

Mag Brush for Hi Cap Rifles Fits 5.56 and 7.62

From the Makers of GTUL

— Wear eye protection when cleaning magazine —



\$29.95

www.mygtul.com
757-647-0805



▲ The barrel is capped with a 'Birdcage' muzzle brake and it features the M4 contour for mounting accessories.



▲ The collapsible stock from Magpul locks securely in six positions and allows a good cheek weld when shooting.

A smooth Samson Manufacturing aluminum forend is properly mounted with cross bolts instead of just screwing on to the receiver, and it free-floats the barrel for the best possible accuracy. This smooth forend has a rail on top and threaded holes along its entire length at the three o'clock, six o'clock, and nine o'clock positions.

The carbine ships with one long (4-inch) and two short (2-inch) rail sections, which should handle just about any selection of gear. The Picatinny rail on the flat-top receiver mates to a counterpart section of rail on the forend, creating a full-length accessory rail.

■ VISUAL ACUITY

My carbine wears a set of Magpul folding back-up iron sights that present a standard AR-15 sight picture. The front unit adjusts for elevation and the rear for windage, and like the original, the rear has a folding aperture leaf with a larger hole for fast, close-range work and a smaller one for more precise shot placement at longer ranges.

I chose an Aimpoint CompM2 (4 MOA) set in a throw-lever QD base and mount from Global Defense Initiatives in addition to one of my favorites for the AR platform – a low-power variable scope, in this case a 1-3 power from Weaver on an A.R.M.S. QD base/mount.

■ SHOOTING THE BATTLE BORN AR-15

I headed to the range with a selection of ammunition and my Oehler Model 35 Chronograph. The velocities for five-shot strings were:

- 62-grain Green Tip at 3,040 fps average, 41 fps Total Deviation

“ The heart of the Battle Born AR-15 rifle is a flattop receiver cut from a solid billet of 7075 aluminum housing...

DOUBLE VISION

Two optical set-ups were used while testing the carbine.

The first was an Aimpoint CompM2 (4 MOA) set in an incredible throw-lever QD base & mount from Global Defense Initiatives. The GDI mount is a top quality Made-in-the-USA product that is auto-locking and will adjust for out-of-spec rails. It allows for enhanced eye relief, and the manufacturer lists an incredible .01 MOA return to zero.

That might sound a little fishy, but I just tested one of these mounts on my most accurate bolt gun and it performed as advertised.

The second unit was one of my favorites for the AR platform – a low-power variable scope, this one a 1-3 power from Weaver on an A.R.M.S. QD base/mount. The A.R.M.S. base/mount tensions with two large thumbscrews so it wouldn't hold a candle to the GDI unit for repeatability, but it definitely got the job done for basic accuracy testing.



▲ The folding front sight is adjustable for elevation.

(TD), and 29 fps Standard Deviation (SD)

- RP 55-grain FMJ at 3,071 fps average, 129 fps TD and 46 fps SD
- Black Hills 52-grain Moly JHP at 3,134 fps average, 45 fps TD and 18 fps SD
- Federal American Eagle 55-grain at 2,931 fps average, 43 fps TD and 20 fps SD

This was about what I expected from these loads, and although I was a little surprised at the somewhat sedate speed of the American Eagle 55-grain, it was very consistent and quite accurate. Ten shots you can cover with a dime fired from 50 yards while seated with only an elbow rest on the bench is certainly nothing to sneeze at.

The Green Tip 62-grain and the RP 55-grain were almost as accurate, while the Black Hills 52-grain HP was the star for the day, shooting even smaller groups than the American Eagle while clocking in at 3,134 fps.

■ WINDING DOWN

I know that the folks who manufacture the Battle Born carbine might have begun to wonder what could possibly be taking me so long



▲ Hantke ran a variety of ammo through the carbine, including: Federal 55-grain Ballistic Tip, American Eagle 55-grain Ball (FMJ), 62-grain "Green Tip", Federal 55-grain Tactical, Federal 69-grain HP Match, Federal XM193 55-grain Ball (FMJ), and Black Hills 52-grain Moly HP Match.

to do this write-up. The reason is this was one of the few times in almost thirty years that I have elected to go back and confirm that I could consistently repeat a stellar performance.

It is quite common for me to make multiple trips to the range to try and make a test gun shoot well when I am not having any luck at that endeavor, but this is one of the few times that I chose to go back and re-test a weapon to confirm the outstanding initial performance was not just a fluke.

Readers are quick to call "BS" to outrageous claims (and rightly so), but it turns out this kind of accuracy is an easy trick with this carbine and it will not let you

down if you do your part.

It is well made, fitted, and finished, balances just right in the hands, and is easy to handle. I have yet to experience any malfunctions while firing several hundred rounds of different ammunition through the gun.

My old eyes caused me some slight vertical stringing with the open sights, but one-hole groups are common with the scope and a simple rest, and breaking clay pigeon pieces on the back berm at over 60 yards while doing fast offhand drills with the Aimpoint is both easy and fun.

To net it all out...right out of the box, the Battle Born gun is

one of — if not the — most accurate ARs I have ever tested. **GW**

CONTACT

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Xtreme **FREEDOM**

Text & Photos by Dr. Martin D. Topper. Factory Photos Courtesy of Howell Munitions and Technology

Freedom Munitions and Xtreme Bullets offer high quality at a reasonable price

For those who may not be aware, Freedom Munitions and Xtreme Bullets sell first-rate ammunition and components at prices that I haven't seen for at least five years. If this fact makes you as curious as it made me, you'll understand why I visited Howell Munitions and Technology (HMT, the parent company) and toured the facilities in Lewiston, Idaho to see first-hand how they are able to accomplish this.





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Freedom Munitions
produces a wide variety of
high-quality ammunition
for the shooting sports.



▲ HMT's Jansen Jones provided attendees with a briefing on the full line of HMT products at the beginning of the HMT seminar in Lewiston, ID.

■ VERTICAL INTEGRATION

HMT keeps their prices competitive by doing as much work as possible in-house rather than outsourcing tasks to other manufacturers. As part of this vertical integration strategy, HMT designs and makes its own loading machinery, manufactures most of the bullets and cartridge cases it uses, conducts tests on finished products in its ballistics lab, and sells its products directly to customers. HMT even has its own shipping operation that sends products across the country.

This simple yet effective approach dates back several decades. In 1967, HMT began making reloading machines for ammunition companies, and their experience ensures HMT equipment runs at

optimum production levels. Their machines can run 24 hours a day when necessary with very little down time.

In addition, HMT's commitment to quality allows the company to build ammunition to tolerances that are half of those allowed by SAAMI. There are numerous built-in quality checks on the production line. Unlike some other firms' products, Xtreme Bullets are re-swaged after plating to ensure proper diameter and heel dimensions. Bullet core weight variation is kept down to within .02 to .03 grains, and the powder level in each case is measured by fiber optics. These quality controls are critical to accuracy. All primed cases are inspected for high primers, and all loaded ammunition is measured for

overall length, both of which are important for smooth functioning.

But quality control does not end there. Each lot of ammunition is run on a single machine so all cartridges in that lot are uniform, and a random sample of each lot of ammunition is tested for pressure and velocity in SAAMI standard test barrels. Data from HMT ammo are then compared to the results from firing sample rounds produced by SAAMI in the same barrels. This ensures that HMT's ammunition is within industry specifications for interior and exterior ballistics.

Finally, 100% of all cartridges are visually inspected before they are boxed and shipped just to be sure that the ammunition that goes out the door fully meets HMT's rigorous standards.

■ PRODUCT LINES

HMT produces a number of different product lines under both its Xtreme Bullets and Freedom Munitions brands. Xtreme Bullets produces several lines of cast bullets for cowboy and general-purpose shooting. Bullets in the Cowboy line are cast to a hardness of 15 on the Brinell scale and bullets in the Hard Cast line register 18 Brinell.

Bullets in the Copper Plated line have lead cores that are 3% antimony to reduce deformation on firing and usually have a .003-inch plated copper jacket to help prevent leading. Xtreme also makes a Heavy Plate line of bullets with concave bases and copper-plated jackets that are .008 inches thick for those who desire a heavier jacket. Xtreme even makes a traditional



▲ HMT employee places finished brass in a block to ensure that case dimensions are proper.



▲ This HMT loading machine adds powder, checks powder levels and seats bullets to the proper depth, ensuring a quality product.



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▲ This HMT employee checks a random sample of formed lead bullet cores to ensure they are of proper weight before they are copper plated.

55-grain .223 FMJ bullet for use in .223 Rem. and 5.56 NATO rifles.

Last, but not least, Xtreme Bullets offers new and recycled cartridge cases in several popular pistol calibers and recycled cases for .223 Rem. and .308 Win. Recycled pistol brass is made from once-fired brass that only comes from indoor ranges. This helps to ensure the cases are as clean as possible. Much of the rifle brass comes from military ammunition that HMT recycles under military contracts. This makes HMT a major ammunitions recycler.

Freedom Munitions produces ammunition in nine handgun and five rifle calibers. The least expensive line is called Blaster, which is a line of remanufactured ammo intended for training. It is loaded with the same care as all other Freedom ammunition, except that it doesn't have the same level of exterior finish. The price is more than reason-

able. When was the last time you were able to buy 50 rounds of quality remanufactured 9mm ball for only \$9?

■ THE LARGEST LINE

Freedom's largest line of ammunition is comprised of new and remanufactured rifle and pistol ammunition produced under the "Freedom Munitions" name. This line of ammunition is mostly loaded with Freedom's Xtreme bullets, however, for some applications the Freedom line may contain bullets by Hornady or Sierra. Freedom Munitions handgun ammunition includes many of the most popular medium and big bore cartridges for revolvers and semi-automatics.

Rifle ammo in this line includes five popular calibers for modern sporting rifles and long-range tactical rifles. In addition, Freedom does carry some cartridges from other manufacturers, recently selling .300

Win. Mag. made by Fiocchi. In some of the other five rifle calibers, Freedom also currently offers several Fiocchi loads as well as loads produced by Igman, a manufacturer of quality ammo in Europe.

The next handgun ammo line is Hush subsonic. Hush is factory new ammo made especially for suppressed pistols. It comes in 9mm Parabellum and .45 ACP. The 9mm load has a 147-grain JRN Xtreme bullet and a muzzle velocity of 990 fps. The .45 ACP load features a 230-grain Xtreme bullet and a muzzle velocity of 860 fps.

The newest line of cartridges from Freedom Munitions is Super Match. This line uses Xtreme plated hollow point bullets designed to deliver maximum accuracy. It's currently offered in 9mm, .40 S&W and .45 ACP. The .40 S&W and .45 ACP loads are loaded to "major" power factor levels and the 9mm load easily makes "minor."

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▲ This HMT employee does a final quality check when she transfers loaded ammo into individual boxes before shipping.

TEST PERFORMANCE

Load Name	Velocity	ES	Energy	Ave. 15-yd. Group
Freedom Munitions 9mm 147-gr. Super Match	965 fps	43 fps	304 ft-lbs	4.5"
Freedom Munitions .40 S&W 180-gr. Super Match	955 fps	11 fps	365 ft-lbs	2.96"
Freedom Munitions .45 ACP 230-gr. Hush	787 fps	98 fps	316 ft- lbs	3.33"

Five-shot groups fired at 15 yds. using an MTM Front Sight rifle rest and Leupold Kenai spotting scope. Velocity was the average of 5 shots measured 15 feet from the muzzle with a Shooting Chrony chronograph.



▲ Xtreme bullets are primarily formed from a continuous roll of lead wire that is 3% antimony.



▲ This electro-plating bath plates Xtreme bullets to either .003 inches or .008 inches, depending on their intended use.

I was lucky enough to receive some of the first boxes of this new ammo when I toured the Freedom Munitions factory this Fall. The Super Match 9mm 147-grain PHP functioned very well in a SIG P226 X5 and later in a SIG P938.

Last, but not least, Freedom also makes an Xtreme Slug load for use in shotguns. This is a 2.75-inch 12-gauge load that has a 1-ounce Foster-type Xtreme rifled slug and is available in either plain lead or copper plated lead. The case is plastic with a brass head and the slug has a stated muzzle velocity of 1540 fps.

In addition to the slug load, the Freedom Munitions web-site also occasionally offers shotgun ammunition from other manufacturers like Fiocchi and Remington.

■ SHOTS FIRED

After I returned from my visit, I was able to perform live-fire testing at the Flagler Gun and Archery Club. This involved firing Hush in .45 ACP and Super Match in 9mm and .40



▲ Freedom Munitions' .40-caliber S&W Super Match ammo performed very well in the author's Ruger SR40.

S&W. Three different handguns were bench-rested and fired at a distance of 15 yards. The guns selected were a 9mm SIG P938, a .40 S&W Ruger SR40 and a .45 ACP caliber S&W M325 Thunder Ranch revolver. The SIG is a hideout gun and the Ruger is a standard service pistol. The S&W M325 is a Performance Center gun with a very good action, but none of these would be mistaken for target guns.

Three five-shot groups were fired for each load using an MTM Front Sight rest. Five rounds in each caliber were also chronographed with a Shooting Chrony to measure muzzle velocity.

Accuracy tests favored the two longer-barreled handguns over the



3-inch SIG, which has both a short barrel and a fairly stiff trigger. Its best group was a little over 3 inches, while the S&W Thunder Ranch revolver and Ruger SR40 semi-auto both shot best groups around an inch smaller. The Ruger and S&W both produced average 15-yard groups around 3 inches. The SIG had a 15-yard average group of 4.5 inches, which is considered acceptable for a pistol designed for close quarters shooting.

A number of the groups fired by both semi-autos displayed a single flyer that opened them up. This tendency to place four of the five shots in a group and have a single flyer is often seen with semi-auto pistols. I'd previously used the SIG P226 X5 target pistol to fire a set of test targets using the same box of 9mm Super Match. The X5 produced a 3-target average accuracy of just under 3 inches at 25 yards, indicating Super Match is capable of excellent accuracy when used in

pistols designed for target shooting.

Velocity results were good, with all of the loads producing expected velocity and energy levels. In addition, Super Match had good extreme spreads, giving the type of consistency expected of target ammunition. The extreme velocity spread (ES) for .40-caliber Super Match was only 11 fps and the 9mm ES came in at a quite reasonable 43 fps. The full set of performance data is contained in the chart.

■ FINAL NOTES

When I returned from my trip to HMT, I called a friend to tell him about Freedom Munitions, but he was way ahead of me and replied, "I bought 5,000 rounds of their 9mm. Good stuff!"

Whether you buy a box or a pallet, Freedom Munitions and Xtreme Bullets have the built-in quality to deliver good performance at an incredibly reasonable price. **GW**

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Shooting Chrony
(905) 276-6292

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▲ The author test fired three loads from Freedom Munitions in three different handguns. The ammo functioned well in each gun.

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Mule Deer

HUNTING TIPS

Text & Photos by Thomas C. Tabor

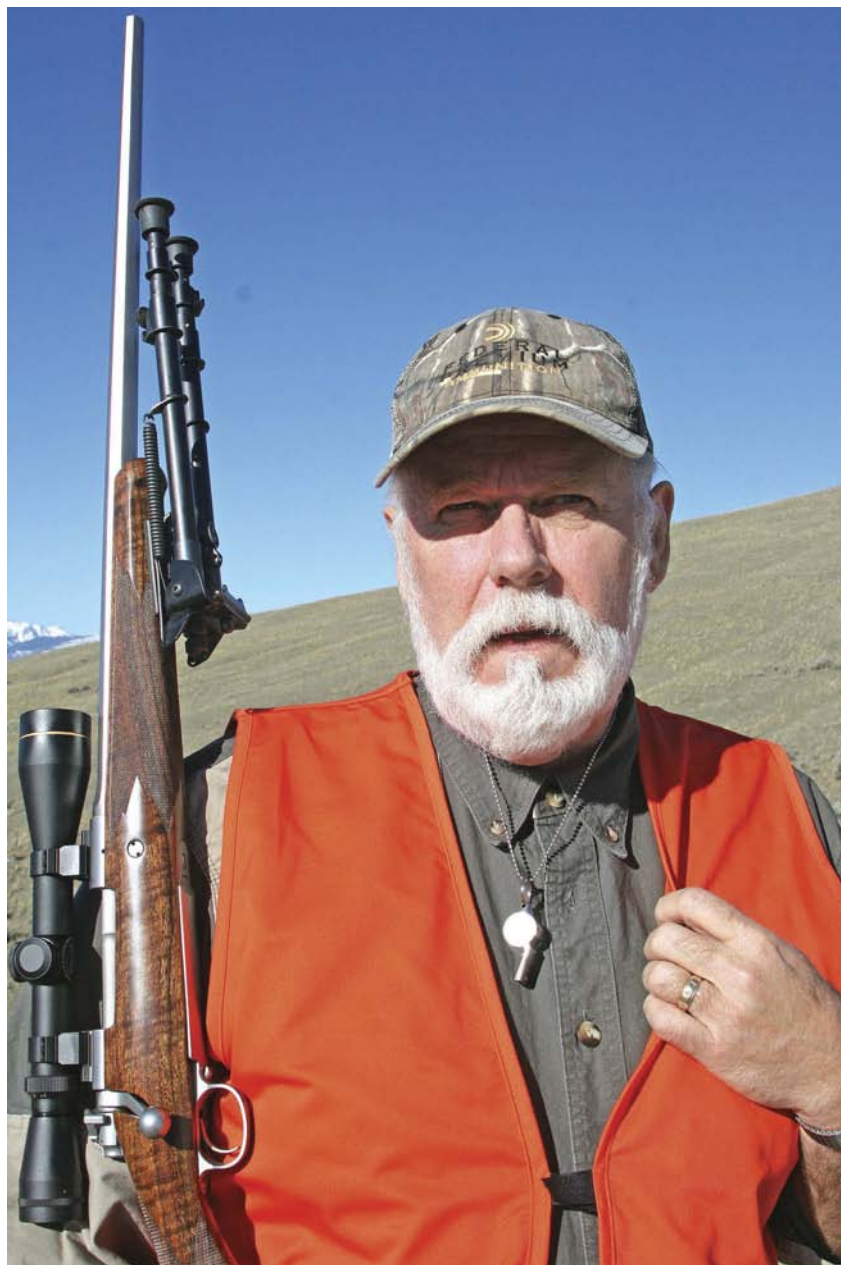
The whitetail's high-climbing cousin
can challenge flatland shooters

To the casual observer the various species of deer may appear to be similar, but the two most common species found in North America, the whitetail and the mule deer, are markedly dissimilar in many ways, and that includes how those species are best hunted. Unlike the whitetail, which is commonly found throughout North America and even in some foreign countries, the mule deer (muley) is truly a phenomenon of the American west. In most cases the muley resides well west of the Mississippi River and at much higher elevations than its white rump cousin.

While the whitetail is a grazer by nature, living largely on the grasses and light vegetation, much of the muley's diet consists of twigs, small limbs, leaves, various types of woody stems and even sagebrush when food is scarce. The mule deer prefers the high country's thinly forested land and open terrain where many agricultural crops struggle to survive.



Even when on level ground a hunter must always think in terms of the path that the bullet will be taking.



▲ Tom sometimes takes along a toy whistle to help distract a fleeing muley.

“A mule deer may linger a moment longer before taking flight, often just enough time for the hunter to squeeze off a shot.

■ KNOW YOUR TRAJECTORY

Because the muley typically prefers higher elevations where vegetation and the cover it provides is sparse, shots are often long; therefore, knowing your rifle and ammunition's potential out to 400 yards can be crucial.

I would never encourage any hunter who feels uncomfortable in shooting long range to attempt to do so, but if you feel confident in making those shots a trajectory chart taped to the buttstock of your rifle may be helpful.

Published trajectory data can be beneficial, but actual live fire practice at those established distances will provide data that are more precise. Along with trajectory drop in 100-yard increments, it's also good to include wind drift values in your chart.

■ SHARP ANGLE SHOOTING

The steep terrain habitat of the mule deer can create its own set of shooting challenges.

First, you must recognize that the trajectory drop of the bullet is not based on the actual distance the bullet travels, but rather on the horizontal equivalency. In other words, if your shot is at 400 yards but the animal is deep in a canyon below you or high overhead on a ridge top, the trajectory drop com-

■ CURIOSITY KILLED THE BUCK

All animals have an inherent sense of curiosity, but how they handle that inquisitiveness can vary greatly. Upon sensing danger, a whitetail deer may remain frozen in position for a time, particularly if they feel that their presence has gone unnoticed. When that danger has been confirmed, they will quickly vanish.

The mule deer typically reacts in a similar manner, but with a major difference that can be taken advantage of by a hunter. Like the whitetail, the mule deer is also a very inquisitive animal and when the level of danger has been assessed, they too, will flee. However, a mule deer may linger a moment longer before taking flight, often just enough time for the hunter to squeeze off a shot.



▲ Off-season shooting practice using various types of rests can be beneficial when it comes time for the actual hunt.

pensation would be considerably less than that of the 400 yards.

Being cognizant of that fact and adjusting for that difference can be key to your shooting success. Some advanced rangefinders and even a few binoculars are now coming out with those calculations built into their displays, making accurate compensations a whole lot easier.

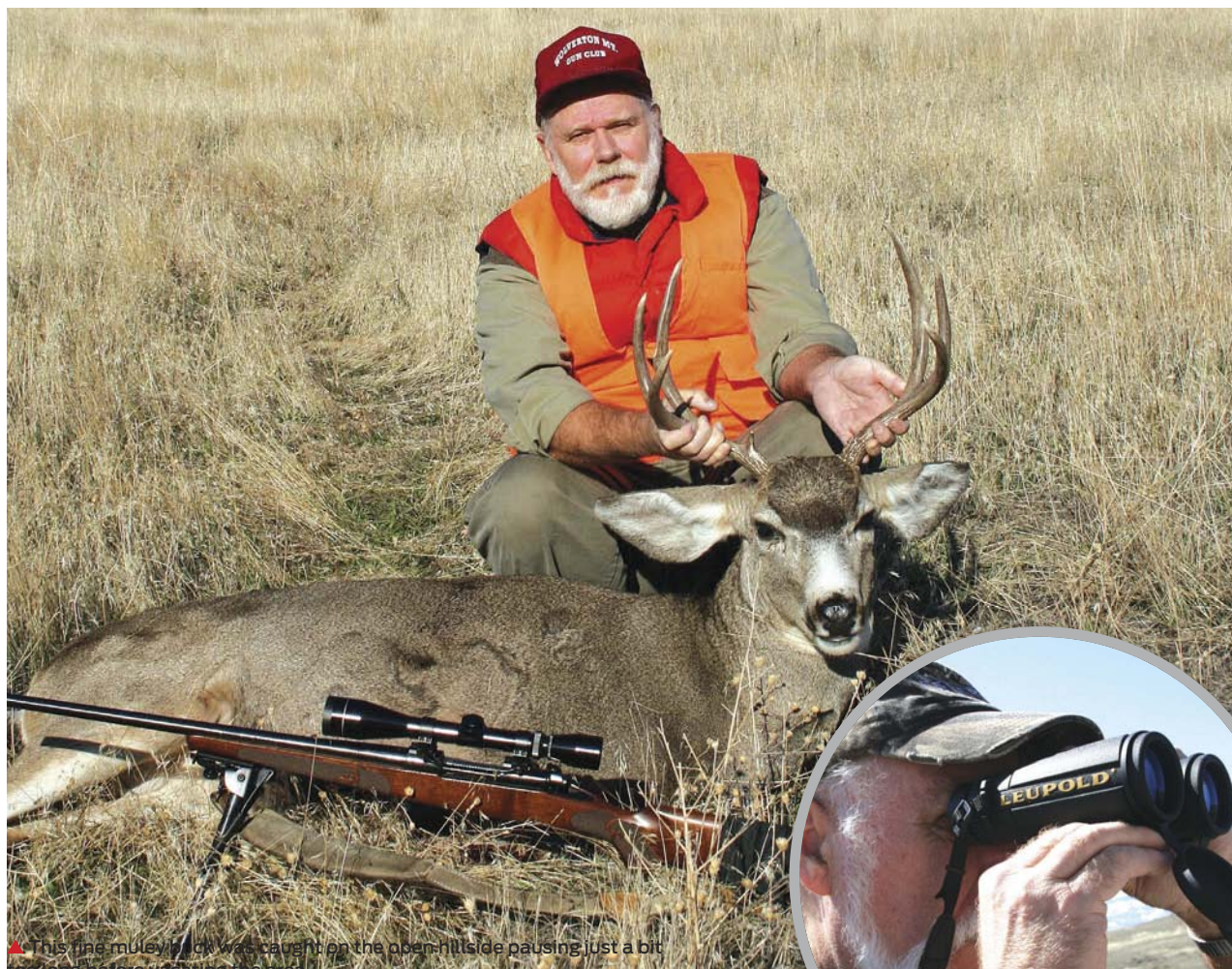
Equally important in steep angle shooting is the path that your bullet will take upon impact. Using our earlier example, for an animal located deep in a canyon bottom it may be necessary for your bullet to enter high in the back of the deer rather than behind the shoulder to ensure it impacts the heart and lung area.

For an animal on a ridge top, the reverse would be true; the bullet might have to enter deep in the brisket area of the deer. Fur-

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▲ This fine muley buck was caught on the open hillside pausing just a bit too long before vacating the area.

ther complicating these shots is the fact that the visual depth of the animal will be reduced from those observation points, which equates into a smaller target to shoot at.

■ GLASSING

Using your hunting time wisely will always allow you to be more successful in the field. One of the best ways is by glassing with good quality binoculars.

Using binoculars to scour the countryside will allow you to cover significantly more area than simply hoofing around it. Then, once deer have been spotted, you will be much better equipped to develop a hidden approach using whatever cover is available to you.

Because quality is so important when it comes to binoculars, I would encourage all hunters to purchase the best quality glass they feel they can afford.

■ TAKE A REST

I know of very few hunters that are capable of accurately placing their shots when shooting off-hand at long range and I will be the first to admit that my own off-hand shooting leaves a lot to be desired. When your rifle barrel is waving around like you are trying to catch a butterfly, you can't expect to hit your intended target.

Because of this, the first thing I look for when deer have been spotted is a place to rest my rifle on or

▲ Using binoculars to glass the open areas and even around the edges of the forested terrain can be much more productive than simply exploring on foot.

against. A fence post will do; a tree trunk will work; or even a large boulder can suffice as long as you pad the surface so it doesn't turn out to be a 'hard-on-hard rest' that can adversely affect the flight of the bullet.

Another alternative is to mount a bi-pod on your rifle that's long enough to be used for shooting either in the sitting or the prone position.

MULEY CALIBERS

The rifle caliber that you select for mule deer hunting may be somewhat dependent upon the type of terrain you intend to hunt and your abilities to shoot well at long ranges.

If the area you will be hunting lends itself to shorter range shooting, or if you feel uncomfortable shooting at longer distances, a rifle in the category of a 30-06 or .308 Winchester may suffice.

However, in many areas of the West, potential shots at 400 or even 500 yards can be common for mule deer and flatter shooting cartridges might be a better choice. In these situations you might do well to choose a 7mm or .30 caliber magnum. But if you are a little recoil shy, a .270 Winchester or even a little .243 could suffice. Both of these cartridges provide a little flatter trajectory than either the '06 or the .308 Winchester.

When smaller calibers are chosen it becomes more important to only shoot the best hunting style bullets and, of course, proper bullet placement becomes even more critical. And for longer range shooting it is imperative that your rifle be equipped with a good variable-power scope with an adequate degree of magnification.

RUT HUNTING

Planning your hunt during the rut, which usually occurs somewhere around mid to late November, makes good sense in many ways. All other times of the year the muleys live a fairly mundane life essentially divided between eating and resting, but during the rut dramatic changes occur.

At this time of the year the bucks become so preoccupied in their desires for breeding that they frequently throw caution to the wind for the sake of finding does in estrus. The bucks stay constantly on the move, wandering through the herd looking for a doe that is ready for breeding.

If none is found then he will move on in an attempt to locate

other potential breeding mates. This roaming activity can result in a great deal of movement of both the bucks and does and that can work very favorably for the hunter.

A great way to hunt during the rut is to locate a good stand that provides some degree of concealment and a good field of observation and let your binoculars do the work for you. While some hunters believe that mid-day is a poor time for hunting, mid-day during the rut can end up being just as productive as early morning or late evening because of these intense movements.

Even deer like to get lucky at least once a year. **GW**



▲ Because much of the mule deer's habitat is lacking in nutritious vegetation, much of their life is spent eating.

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Revisiting a **LEGEND**

Text & Photos by James E. House

Reloading the 30-06 Springfield

Although it started life as a military cartridge, the 30-06 Springfield has been the benchmark of big game cartridges for over a century. After all, the “06” refers to the year of introduction, 1906.

The predecessor to the 30-06 was an older cartridge known as the 30-03 to denote the year of its introduction. Originally developed as a military cartridge designed to fire a 220-grain bullet, the bullet weight was reduced to 150 grains and the case neck shortened slightly because less support was needed for the shorter bullet.

The range of factory ammunition available in 30-06 Springfield caliber is the widest of any centerfire caliber. I remember seeing factory loads with bullets ranging from 110-220 grains, as well as the Remington Accelerator varmint round that utilizes a 55-grain bullet held in a plastic sabot.

Over the years, the 30-06 has been highly developed and rifles of every conceivable type have been chambered for it. In fact, I know a doctor who uses a 30-06 double barrel to hunt deer. The 30-06 is truly a world cartridge with rifles and ammunition available almost everywhere you can imagine.

The 30-06 can be loaded effectively with a variety of propellants.





▲ All loads were tested in this Remington 700 with a 3-9X Leupold VX-II scope.

Even though my Remington 700 has a strong, modern action, I still prefer to keep my loads for the 30-06 in the moderate range. Frankly, I have no need for a more potent rifle and neither do many others. That is why the ammunition companies produce full power loads as well as reduced loads that have about the same power as a 30-30 Winchester.

“I would have no hesitation to increase the charges by a grain or so in my rifle, but loads must be developed carefully for each individual rifle.

■ FOR EXAMPLE

For this project, I chose several bullets that span the range from 110-180 grains and powders that are readily available. There is no need for anything exotic when loading the 30-06.

I used Winchester cases trimmed to a length of 2.484 inches and primed with Winchester large rifle primers. Velocities were measured at 10 feet from the muzzle using a Competition Electronics ProChrono chronograph.

The data listed in the table show that the loads are, as intended, on the moderate side. Knowing that many 30-06 rifles have been around for a century makes me hesitant to show hotter loads even though they would be perfectly safe in modern rifles.

Older Springfield 1903s did not have modern heat-treated steel

■ SUCCESS FACTORS

For medium to large game, the cartridge performs well with bullets in the 150-180-grain range, especially because a wide selection of premium bullets is available. Loaded with a Swift A-Frame, Trophy Bonded Bear Claw, Nosler Partition or other superb projectile, there is little to be gained by going to a heavier, slower bullet.

In spite of the vast selection of factory loads, it is by judicious hand loading that the 30-06 achieves its true potential. The 30-06 is the best-selling series of reloading dies, evidence that plenty of shooters take advantage of its flexibility.

Bullets are available in weights from less than 100 grains to around

250 grains. The 30-06 case has a generous capacity, and although the bullet diameter is rather large, the most appropriate powders are those having medium-slow to slow burning rates. There are at least two dozen suitable powders, including IMR 4064, 4320, 4895, and 4350; Winchester 760; Alliant RL 17 and 19; Accurate 4350 and Hodgdon H414, H380, and H4350.

Originally, the pressure maximum for the 30-06 was about 45,000 psi and that level is still appropriate for older rifles. However, keep in mind that there are some 30-06 rifles still around in the grandfather or great grandfather age group and some were never as strong as modern rifles.

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and an old Winchester Model 95 lever action should not be stressed. However, the loads listed are perfectly adequate for most hunting situations, except for use on large game such as elk or moose.

If I were assembling loads that required more power, I would have

no hesitation to increase the charges by a grain or so in my rifle, but loads must be developed carefully for each individual rifle.

The powders used in this project include some old classics, but Alliant Reloder 17 and Hodgdon CFE 223 represent some of the newer

propellants. All of the powders gave excellent results.

Although these are by no means the only powders suitable for loading the 30-06, they are capable of bringing out the best in this classic caliber.



▲ Bullets used in load testing included (left to right) the 110-grain Hornady SP, 125-grain Remington PSP, 125-grain Nosler Ballistic Tip, 130-grain Hornady SP, 150-grain Nosler Ballistic Tip, 150-grain Winchester Power Point, 165-grain Swift A-Frame, 168-grain Sierra HPBT, and 180-grain Hornady SP.

RESULTS OBTAINED USING A 700 REMINGTON 30-06 SPRINGFIELD WITH A 22" BARREL

Bullet	Length, in.	Powder	Charge, gr.	Velocity, ft/sec	Group, in.
110 gr Hornady S.P.	3.177	IMR 8208 XBR	51.5	3199	1.88
125 gr Remington PSP	3.050	Hodgdon CFE 223	53.0	2966	1.12
125 gr Nosler Ball. Tip	3.258	Hodgdon CFE 223	53.5	2947	0.87
130 gr Hornady S.P.	3.175	IMR 4064	51.0	2894	1.43
150 gr Nosler Ball. Tip	3.246	Alliant Reloder 17	54.2	2743	0.92
150 gr Winchester Pr. Pt.	3.180	Win 760	55.0	2737	1.83
165 gr Swift A-Frame	3.177	IMR 4350	53.5	2577	1.06
168 gr Sierra HPBT	3.300	IMR 4350	53.5	2582	1.44
180 gr Hornady S.P.	3.230	Win. 760	51.0	2472	1.10

Average velocity is for 5 shots. Group size is for the four closest shots.

These loads were safe and reliable in the author's rifle, but neither the author nor the publisher accepts any responsibility for their preparation and use by others. These loads should be approached with caution.

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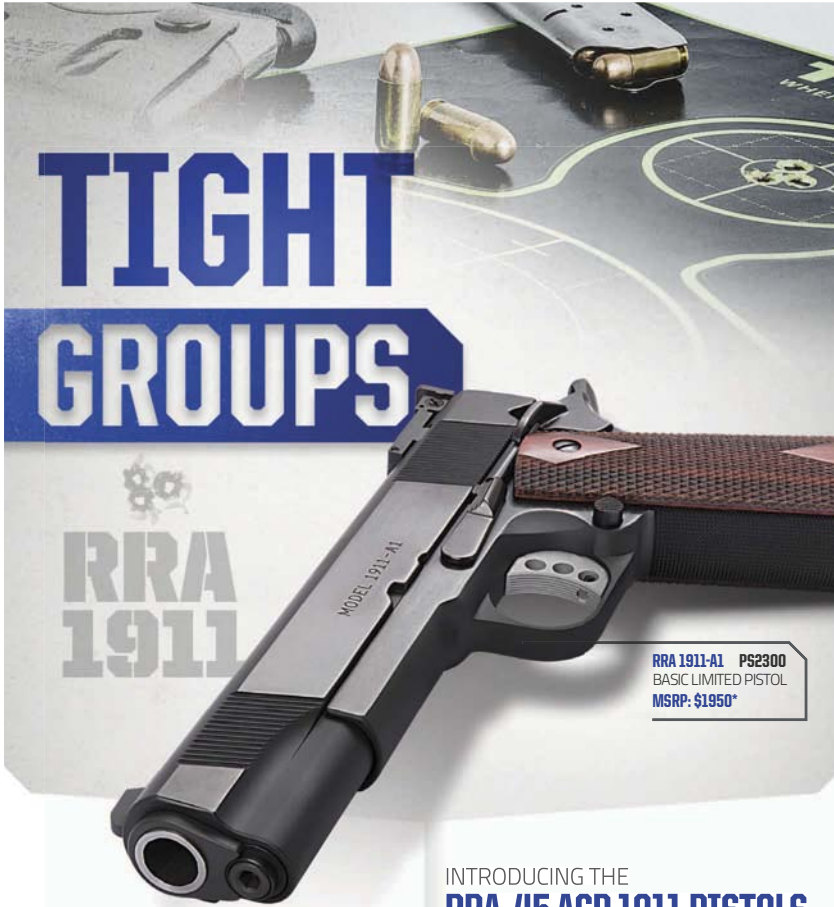
■ PRACTICALLY PERFECT

My practice is to consider groups in terms of the majority of the shots rather than simply measuring the distance between the two widest shots. With this in mind, it is apparent from the data that all of the loads gave excellent accuracy in a basic sporting rifle.

As has been the case for many

years, the 30-06 Springfield shows its versatility using the loads assembled in this project. It is quite capable of performing many functions just as well as some of the more exotic magnums.

There is a reason why a newly introduced rifle is usually available in 30-06 Springfield caliber — it works. **GW**



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HANDGUNS

Keep Those



While on his hands and knees praying to the God of Lost Parts, Workman's faith waned. He ordered replacement parts instead.

HANDGUNS RUNNING

Text & Photos by Dave Workman

Take care of your guns and
they'll take care of you

If you shoot guns long enough, something is likely to go haywire. Such was the case with one of my prized Smith & Wesson Model 19 revolvers, one of the guns recently featured in my "retirement gun" column.

This was a rather embarrassing moment, because I made this vintage 2½-inch Model 19 S&W revolver famous and our relationship goes way back. I think the gun did it just to teach me a lesson, that both of us are getting older.



▲ Maintaining your carry handgun sometimes requires adding replacement parts. In this case, it was the retaining nut on a Smith & Wesson revolver's cylinder release.

After over 30 years of service and shooting countless .38 Special and .357 Magnum rounds without complaint, the little S&W had a slight malfunction. The retaining nut on the cylinder release latch popped off, allowing the unrestrained latch to drop on the shelf of my shooting stall.

Even with my nose scraping the cement floor, I could not find that tiny nut. I packed up my range gear and went home to hit the S&W forums for a quick solution, then emailed Smith & Wesson. Five days later, a couple of those little rascals showed up in the mail.

Fortunately, I have two Model 19 revolvers, and I cannibalized the latch nut off the 6-inch model to keep my 2½-inch gun in service until the new nut arrived.



■ MAINTENANCE IS THE MORAL

Now, that's not much of a story, right? The hell you say.

Guns are machines, complete with moving parts, fasteners, and things that can break or fall off. Like any other machine, a firearm requires periodic maintenance to keep things running smooth and prevent issues down the road.

We're pretty good at cleaning our guns, but not as diligent on the preventive maintenance front.

If you plan to keep a favorite handgun running, you need to give it a once-over now and then to make sure all the screws are tight on parts like the frame and the adjustable rear sight; anything that screws in can *unscrew* at just the wrong moment.

The tech at S&W suggested a drop of Loctite Threadlocker Blue 242 removable nut and bolt locker to secure the offensive nut, so it won't vibrate off from endless recoil pounding pulses.

This is important: Blue Loctite "glues" threaded fasteners in place, but you can disassemble the parts if necessary. Red Loctite permanently bonds fasteners that will never require service — ever.

Incidentally, several years ago I obtained a set of magnetic hollow-ground gunsmith screwdrivers from Wheeler Engineering. These are indispensable when you're doing routine maintenance.

Not wanting another loose part treasure hunt, I put a bit of Blue Loctite on the threads and installed the nut with a magnetic screw-

driver. For good measure, I gave it a good twist to make sure it was nice and tight.

A couple of days later, I was back at the range, running strings of full-house reloads powered by a healthy charge of Alliant 2400 pushing a 125-grain Nosler JHP down the bore. With that load, my little snubby shoots a tad high at 25 yards, but it's dead-on at 50 yards.

■ TOUCHING UP

If you carry a blue steel handgun, the bluing will eventually wear off where the gun contacts the holster — holster wear. At some point, you may want to touch up the bluing. I use Birchwood Casey Super Blue, a cold blue formula that works reasonably well, provided you follow the directions.



A drop of Loctite Blue removable thread locker helps secure small fasteners. Reassemble parts over a paper towel to catch any drips — or dropped parts.

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▲ Workman favors magnetic hollow-ground screwdrivers to hold small parts. Notice the blue Loctite inside the nut.

Degrease the surface with denatured alcohol (or similar residue-free solvent), then buff the spot to be re-blued with #0000 super fine steel wool. Rinse with cold water, dry thoroughly, dab on the blue (I like using cotton swabs) and wait about 30 seconds.

Rinse in cold water, dry it off, and brighten the newly blued area by lightly buffing with another piece of #0000 steel wool.

Repeat the process for a deeper blue finish, and complete the job by wiping the surface with an oily patch.

■ CRUDDY JOB

Take the grips off and clean inside the grip frame. Far too many of us don't think of this, and we certainly should. Like it or not, crud accumulates inside the grip frame over the years.

If it's real dirty, get a can of Blast and Shine and shoot the innards with a jet of aerosol to knock down thick grime. Use a toothbrush and Hoppe's No. 9 solvent for detailed crevice cleansing. After the scrubbing, it's a quick shot of Blast and Shine, followed by a drop of oil spread thinly with a patch and your handgun is back in business.

■ GOT GRIPS?

This might be a good time to swap out the factory grips for something more weather resistant. I have a slightly customized Colt Lightweight Commander that has worn a set of genuine stag grips since I took delivery many years ago. They look great, feel good in dry weather, but have little wet weather traction.

Practicality finally trumped pretty, and I put on a brand new

Pachmayr Signature wrap-around grip and set my prized stag panels aside carefully. Before installing replacement grips, give the frame a wipe with an oily cloth and leave a bit of film on the steel.

Years ago, I had two good pals, both of whom carried stock Lightweight Commanders with Pachmayr's grips. In competing against these guys in club matches, it struck me that they probably knew something I didn't.

I've used Pachmayr grips on my .41 Magnum Ruger, S&W revolvers, a classic Colt Diamondback and Python, and I experienced good results with every gun. They are impervious to the weather and the molded checkering is truly non-slip. By the way, you can keep Pachmayr's looking like new by scrubbing the textured surfaces with a light shot of WD40 and a toothbrush.

■ WINTERIZATION

Winterizing your semi-auto isn't difficult, but involves a trick I learned from the late Richard Neimer, gunsmith extraordinaire at Olympic Arms. He built one gun for me and tricked out three others, and they all still run great.



▲ After tightening the nut, wipe off excess Loctite for a tidy job.

In the kind of muggy, damp weather known to people who live along the Pacific Coast, the Gulf Coast or the lower East Coast, use a toothpick to spread a thin film of white lithium grease on the slide rails instead of oil. The grease is highly water-resistant and super-slick, both good things for wet-weather guns.

Aerosols are dandy, and a little can of synthetic gun oil can go a long way. I give my pistols a little squirt of that stuff when I do a full cleaning, and I strongly recommend them to anyone who isn't comfortable completely field-stripping a semi-auto for maintenance.

■ HODGDON'S 'NEW' CFE POWDER

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▲ Back at the range after his misadventure, the Model 19 went through full-house loads and everything stayed put!

I am always on the lookout for a new propellant, and a few months ago Chris Hodgdon sent me a sample of CFE pistol powder. You may have read about this powder elsewhere in the magazine, but here is my take on it.

Having developed reliable loads with other Hodgdon propellants (HP38, H110, TiteGroup), I was reluctant to start messing with success. Reading up on the subject, I found CFE seemed quite versatile, including loads recommended for the .38 Special, .357 Magnum, .45 ACP and even the .45 Colt.

Experiments with Rainier Ballistics 200-grain plated round nose .45-caliber bullets for the .45 ACP and CFE revealed that a 6.4-grain charge worked well with my guns and shooting styles.

At the range, this less-than-maximum load was dead-bang accurate. Out of my Springfield

National Match 1911 and my Lightweight Commander, I managed to roll a tin can around at 25 yards shot after shot.

CFE (which stands for Copper Fouling Eraser) is interesting stuff. It burns clean, and anybody who remembers the “old days” of cleaning up after an extended session and finding little yellow grains of powder residue knows the importance of that. As the name implies, I didn’t notice any copper fouling in the bore or chambers of either my auto or revolver.

Recommended data is available online or in Hodgdon’s Annual Manual. For the shooter who wants to avoid a repeat of the recent ammunition shortage, reloading may be the smart way to go. With reliable new propellants like CFE, homegrown ammunition can lead to many hours of enjoyment at the bench, and on the range. **GW**

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Building the **REMINGTON VARMINT RIFLE**

Text & Photos by Steve Sieberts

Cleaned, Reassembled, and Crazy
Accurate – and We're Not Done Yet

Last month, we were able to remove the barreled action from the stock and thoroughly inspect our spot bedding job. Finding no voids, gaps, air pockets or pinholes, the work seems solid.

Now we'll clean up the whole works, then install the Match grade trigger, and mount the new scope. Then it's off to the range to see how much the rifle's accuracy has improved over its out-of-the-box baseline.



The author dry firing the project rifle and getting ready to sight in. It takes a little practice to get used to the high quality of the Jewell trigger, which has a clean one-pound pull weight.



▲ When I initially bedded the rifle I placed some bedding material on the front and rear guard screw areas of the stock, so the fit of the floorplate was snug, as it should be. Here, I'm reinstalling the floorplate and checking for fit.

THE DIRTY WORK

It's true, nobody likes to clean up, but we have to before moving on to the more interesting areas of the project.

The first task is to remove the modeling clay we used to keep the epoxy from flowing into the gas port, trigger slot, and other places we didn't want it getting into. Then, remove all of the bedding tape.

Make sure that the barrel is free floating by scraping out the epoxy that flowed in front of the recoil lug and remove the tape from the bottom of the recoil lug.

After taking off the tape and the modeling clay, use a good solvent and an air hose to clean any remaining traces of release agent residue from all the metal parts, including the floorplate.



▲ Installing the Jewell Match trigger, along with bedding the rifle, will go a long way toward getting the rifle to shoot one-hole groups. The trigger is fully adjustable for sear engagement, weight of pull and overtravel without removing the barreled action from the stock, making adjustments fast and easy.

Now that the metal is pretty much cleaned up, we can shift our efforts to the stock by stripping off the masking tape as we move on.

Before we begin our next chore, be acutely aware that there must be no stock-to-metal contact anywhere on the front and rear guard screws; wood touching the bolt handle is forbidden as well.

With those key points in mind, let's get out the carbide bits and grind away any overflowed epoxy so it's even with the wood. Don't worry about accidentally grinding into the wood; we'll go back later and seal the wood.

Next, drill out the guard screw holes using the drill press and a 17/64-inch drill bit, if available. As long as the bit that you're using is slightly larger than 1/4-inch, things should be fine. We are not drilling to a specific dimension, we just need a clearance hole.

So far, we've cleansed the metal components, tidied up the stock and drilled out the stock screw holes. The fun steps are next, so let's start re-assembling the rifle.

■ STOCKLESS TRIGGER INSTALL & FUNCTIONALITY

In the July issue, I mentioned replacing the factory trigger with the outstanding Jewell trigger. One of the Jewell trigger's practical features is that it's a captive trigger. This means that the sear is contained within the trigger housing, creating an easy to install unit, rather than a bunch of individual pieces to assemble.

Don't get me wrong; the factory trigger isn't difficult to reinstall, it's just that you have to use a little more care so the sear doesn't flop open and dump the

sear spring onto the shop floor.

If this happens — and it will if you mess with factory triggers long enough — you'll be doing the "gunsmith's crawl" on your hands and knees looking for small springs, pins and whatnot that fall out of the gun and onto the floor. The spring or part always flies into an obscure corner, making your time looking for it exponentially longer.

The Jewell trigger that I ordered

from Brownell's has the standard safety located at the top right, and the bottom bolt release is in the original Remington factory location. Depending on the type of gun you've decided to work on, you can choose from several safety and bolt release options.

In addition, our Jewell trigger can be adjusted for sear engagement, weight of pull and overtravel without the need to remove the rifle



▲ This area where the bolt release lever on the trigger pushes up on the bolt release is a good spot to use a little bit of dry graphite lubricant.

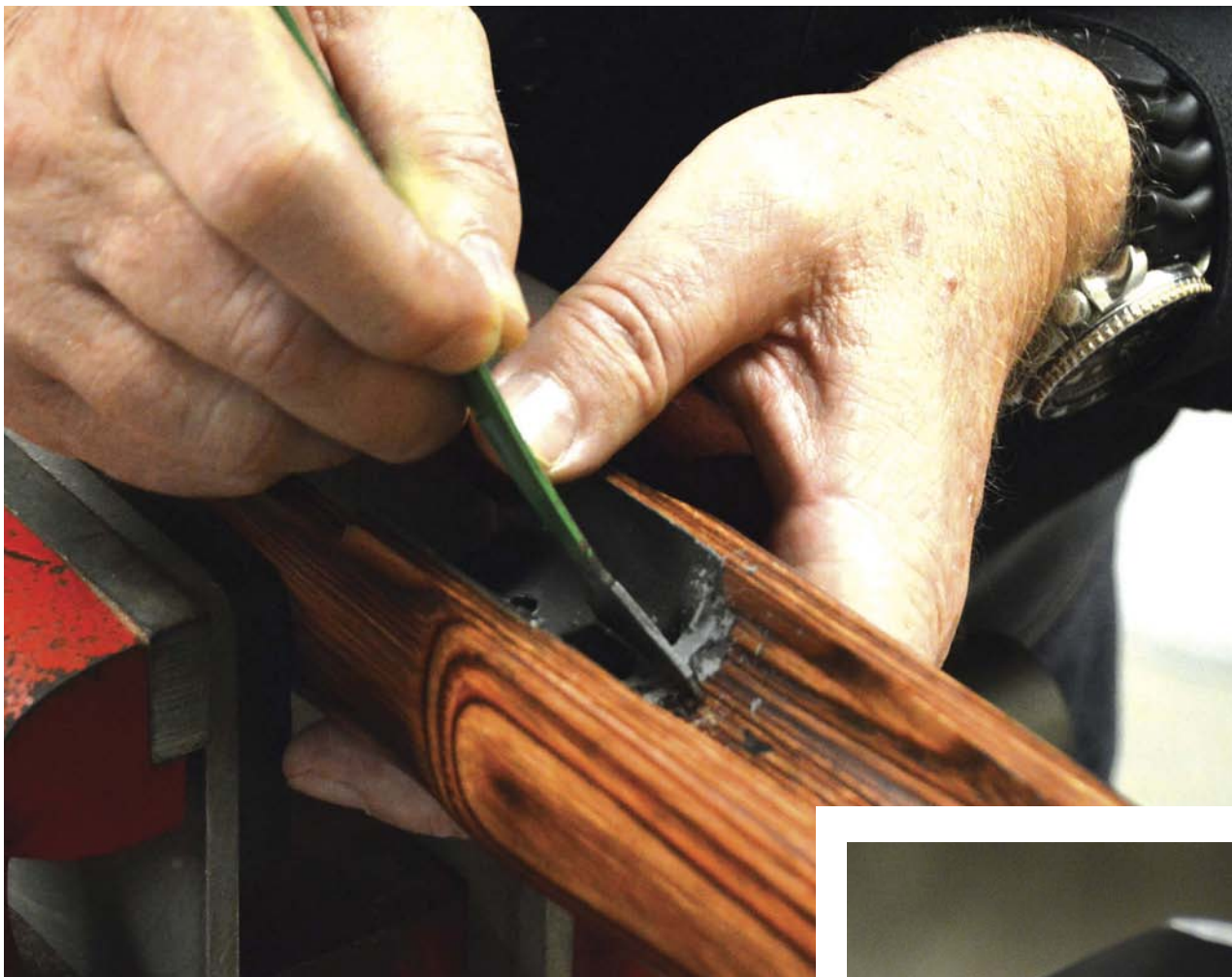
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▲ Here I'm using the wood scrapers to get out the epoxy in front of the recoil lug.

from the stock, which is really convenient.

To install the Jewell trigger, insert the front trigger retaining pin first to hold the trigger on the receiver. At this point, I use a "helper" punch to line up the bolt release and bolt release spring while I drive in the rear trigger retaining pin.

The pins have a flat end and a tapered end, and it really doesn't matter which way they go in, because we aren't doing a full bedding job on the rifle. It will matter later, however.

Once the rear retaining pin is in place, it's time to do a function check. Even though we can make adjustments to the trigger with the

receiver installed into the stock, it's still easier with it out of the stock.

So, cock the rifle and place it on Safe, pull and release the trigger, and move the safety from Safe to Fire. The gun should NOT fire.

Open the bolt and retract it as if ejecting a spent shell, then slam the bolt home and drop the bolt handle one time. The rifle should stay cocked; if it fires, you need more sear engagement.

Use your trigger pull gauge to set the weight of pull exactly where you want, or leave it at the Jewell factory setting. The Jewell trigger is set from Jewell at 1 pound and I'll leave it there.

I could adjust it higher, but why



would I do that? This is a varmint rifle and lighter is better. If this trigger was going on a tactical rifle, and we installed a bunch of them when I was building rifles for the Government, we always set the triggers for about 2.5 pounds. Law enforcement triggers should be set to 3 pounds for liability reasons.

During the function checks, there was a bit too much trigger overtravel for my tastes. For a varmint rifle, I can set it very close without worry.

A tactical rifle trigger would be set differently, as we will discuss in upcoming articles. When I start building the tactical version of our base rifle, you will see how much tactical rifles and varmint rifles have in common, as well as the differences between them.

■ STOCKING THE ACTION

Now that the trigger is in, the next steps include reinstalling the magazine box and patiently working the spot-bedded stock onto the receiver assembly. This should be a very tight fit, so you'll have to wiggle the stock a little to get it up into the receiver.

The stock-to-receiver dimensional tolerances are much closer than on a factory-fresh firearm, which greatly improves the accuracy potential of our rifle. And improving the accuracy is why we are going through the trouble of bedding the rifle.

With the stock in place, turn the rifle upside down and insert the guard screws in the stock. The screws should easily drop into the holes you drilled earlier.

If you have to push the guard screws into place, the holes are too small. No problem, just stop what you're doing, take off the stock and drill the holes again with a larger drill bit.

“Our Jewell trigger can be adjusted for sear engagement, weight of pull and overtravel without removing the rifle from the stock...”

After the guard screws have dropped easily into their holes, snug them up with an Allen wrench, then use a torque wrench to tighten the screws to about 50 inch-pounds.



I've installed the front trigger retaining pin, and now I'm using a "helper" punch to hold the trigger parts in place so I can drive in the rear retaining pin. As I drive in the retaining pin, I'll pull out the helper punch.

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Sixty-five inch-pounds is a good setting for a pillar bedded rifle, but this is just spot bedding, so we don't want to compress the stock too much with over-tightened fasteners. Fifty inch-pounds is usually perfect, but all rifles are different and experimenting with guard screw torque values could help you get the very last bit of accuracy from your gun.

PROBLEMS FOUND

The rifle is reassembled, meaning we need another round of function checks to make sure things still work as they should.

Cock the rifle and test the safety, then manipulate the bolt release to verify proper function.

Check to make sure the floor-plate locks and unlocks with both an empty magazine box, and a full one. You do not want the floorplate

to pop open, dumping out your ammunition at the most inopportune time.

The routine function tests revealed that this rifle was interesting, and could require extra attention. The bolt release was binding on the trigger guard slot, so I filed off material to open up space for the bolt release to work properly, resolving the problem. After the bolt release was fixed, another issue reared its ugly head.

When function testing the assembled rifle, I found that if the bolt was cocked with the safety in the Safe position, moving the safety lever from Safe to Fire caused the rifle to fire – without touching the trigger.

This is one of the most dangerous real-world scenarios, and good troubleshooting techniques can make a bad situation go away.





The Nightforce NXS 8x32x56 is an outstanding and very versatile scope for either varmint or tactical use. There are many reticle options to suit any need.

■ DIAGNOSIS AND TREATMENT

First, I wanted to find out if the Safe to Fire malfunction occurred only after we reassembled the action and stock. I performed a function check without the stock, and since it was not working properly, my guess was the trigger was binding on the stock.

So I decided to do another function check, and the safety was only malfunctioning with the stock on the rifle, which indicated to me that the trigger must be binding on the stock.

The next step is to look for areas on the stock and the trigger where it might be binding. Shiny spots on the wood or the trigger can reveal sources of contact.

It took me a while to locate ex-

actly where the stock and trigger were rubbing together, but the Kutzall bit quickly relieved the area and all was good.

Once I removed the area on the stock that was causing the trigger safety to bind up, I sealed the wood with a good polyurethane sealer to keep moisture out of the wood. If moisture enters the wood through an unsealed spot, the stock will warp and swell, undoing the close fit we achieved by bedding the rifle.

Finally, once the rifle was back together, the barrel got a good scrubbing and patching out with Shooter's Choice bore solvent. I always clean the rifle barrel first before installing the scope to avoid damaging the optical coatings with stray solvent.

The scope is the Nightforce



This 1/4x28 TPI tap precisely cleans epoxy from the guard screw threads and also retouches the threads in the receiver, making them uniform. My threads were a little undersized.

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▲ The Clymer finish reamer and the Go headspace gauge in SAAMI-spec 22-250 are precision ground tools that will be used to set the final chamber dimension and headspace when we rebarrel the rifle with the short-chambered Shilen Match barrel.

NXS 8x32x56. It's a bit large for a walking rifle, but an excellent choice for long-range varmint and predator hunting.

Our scope has the NP-2DD reticle, which is just a simple fine dot with three tapered lines converging almost onto the dot. It makes for an uncluttered sight picture. The field of view was bright, and adjustments were crisp and precise.

SHOOTING & MEASURING

Shooting the rifle at the range was a blast. Conditions were excellent, with temperatures in the 70s and a light swirling breeze. The rifle is a lot of fun to shoot, and since the 22-250 generates such little recoil, firing 30 to 40 rounds in 90 minutes is easy and enjoyable. Acquiring and holding the aiming point was easy using the Nightforce 8x32 scope.

Each of the range tests consisted of firing a five-shot group into a target located 100 yards

away, then precisely measuring the bullet holes in the paper target to quantify accuracy.

The first groups I fired were to get the rifle on paper and see if there were any issues. The Federal American Eagle had 1.5-inch groups for five shots, which was about what I expected.

The next group was the factory Hornady ammunition, which performed well with the box-stock rifle. This time, groups had shrunk to less than 1 inch, with the 50-grain V-Max coming in at 0.979 inches.

This was followed by the Federal loaded with the 60-grain Nosler Partition, which didn't shoot as well as I thought it would, grouping five rounds at 1.587 inches. I think the bullet is a bit too heavy for the 1:14 twist of the factory barrel. I'll be interested to see what this load can do once I install the 1:7 Shilen barrel.

My 52-grain Berger flat base Match varmint handloads went

downrange next, giving up a sizzling 0.380-inch five-shot group. This would turn out to be the best group of the day.

The last groups were also my handloads, using the Hornady 50-grain Z-Max zombie bullet. I shot two groups with that load and both were under an inch, coming in at 0.627 inches and 0.923 inches.

To put these numbers in perspective, before I started to work on this rifle, the groups averaged around 1.25 inches. After this trip to the range, four of the eight groups

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were under an inch, much better than what the rifle could do before the spot bedding job and new trigger. The accuracy is improving.

Remember, I haven't even started working on load development. Experimenting with powders, primers, and seating depths, and

working with the Redding neck-sizing die could make this rifle really sing, even before we install the match grade barrel.

However, load development is an ammunition-refining topic, and we're mainly concerned with the rifle, so we'll keep working on the

gun. By adding the new barrel, along with a few other tricks, this rifle will be even more of a tack driver than it already is.

One thing I noticed when dry firing prior to shooting was the jump of the rifle when the firing pin slammed home. I could really see the reticle jump when the firing pin fell. I'll address this issue later on in the build.

I'm pretty happy with the project so far. It has proven that a little bit of bedding work, a decent trigger, good ammunition and high-quality optics go a long way toward making a precision rifle.

I hope I've also shown that Remington rifles respond well to a small amount of very basic bench work, making Remingtons popular platforms for custom rifle builders.

GW

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▲ The SWFA SS 6x42mm Tactical Riflescope offers a great combination of image quality, solid construction and affordable pricing. It would make a great addition to any tactical bolt action or modern sporting rifle.

Affordable EYES & EARS

Text & Photos by Tim Stetzer

SWFA's SS 6x42 Tactical Riflescope is a quality, flexible optic at a reasonable price

I spent a good number of years focusing on pistol and shotgun shooting, or semi-auto modern sporting rifles using red dots. More recently, I have been taking the time to get back to the bench and really see what the rifles I am shooting are capable of. After making the choice to begin, I realized I had a distinct dearth of quality optics for this purpose. In fact, my only

scoped rifles were a Marlin .22 Magnum, my old Ruger M77 and my dad's Remington 788.

Clearly, I needed something a bit more suited to the tactical rifles I've been shooting, so I started looking around at what options were out there. Now, I'm a police officer in my day job and my partner is on the SWAT team, so I asked him for suggestions. He ended up recom-

mending that I try out the SWFA line, as he uses a 10xSWFA scope on his personal .308 sniper rifle. The fact that he trusted SWFA on his personal rifle made my decision an easy one. I contacted SWFA to see about getting a T&E scope to try out.

■ OPTIC OPTIONS

SWFA has about 20 different options in optics ranging from compact patrol rifle scopes all the way up to 5-20x50 tactical scopes. I wanted something a little more than a compact patrol rifle scope but didn't want anything too extreme either, so I ended up going with an SWFA SS 6x42mm Tactical Riflescope along with an SWFA S.S.A.L.T. 30mm Scope Mount. I liked the simplicity of the fixed 6x and that was plenty of magnification for the ranges I'd be shooting at, basically 300 yards and in.

I soon found out that SWFA offers an excellent quality optic at a

very reasonable price. The 6x42 I tested runs for \$299.95 and the mount an additional \$59.95. So for well under \$400 you've got a great setup with a mil dot equipped tactical scope that offers excellent optical quality and great light gathering ability with its big 42mm diameter.

The large tactical turrets made for easy adjustment and can be set to zero once you are sighted in. These scopes are rated for use on anything up to a .50 caliber, so the M4 style 5.56 FN-15 that I used for testing was no issue at all as far as recoil goes.

SWFA has a good set of accessories available as well, including lens covers, sun shades, flash kills and levels. I found the S.S.A.L.T. mount to be rock solid and easy to install on the FN's rail. It's sized for a 30mm scope body but comes with 1-inch inserts so you have some options if you decide you want to switch out scopes once you have the mount.



▲ The author paired up the SWFA SS 6x42 Tactical Riflescope with an FN-15 for range testing and they proved to be a formidable combination.



▲ The SWFA SS 6x42 riflescope surely helped the author make the most out of the FN-15 he used for testing.

CONTACT

SWFA Inc.
(972) 726-7348 (SCOPE-IT)
SWFA.com



▲ The Otis Ear Shield is an affordable, lightweight solution that combines good hearing protection with the ability to still hear range commands and conversation.

Otis Ear Shield offers revolutionary hearing protection at unexpected prices

After a little over three decades of shooting as a civilian, in the military, and as a police officer, coupled with working on the flight line in the Air Force Reserves, I probably shouldn't be surprised that I have tinnitus. While I did wear full ear muffs when working around aircraft, I never doubled up with ear plugs because I wanted to be able

to hear radio transmissions and everything else that what was going on around me.

When shooting I typically just shot with plugs because I didn't like how shooting muffs interfered with getting a good cheek weld when shooting rifles and I wanted to be able to hear range commands, so I only used one layer of protection.

When I joined the police force I actually bought a very good set of battery operated shooting muffs that allowed me to hear clearly while still protected my hearing.

I soon found, though, that I still didn't like wearing muffs. The batteries were dead half the time and they ended up sitting unused in my gun cabinet. I went back to just using ear plugs, which is a suboptimal solution for someone who already has hearing damage. So it was with great interest that I heard about the new Ear Shield from Otis Technologies earlier this year.

On paper, the Otis Ear Shield sounded like just the thing I had been looking for: a lightweight headset with a set of foam earplugs attached. The headset itself is adjustable and folds for compact storage and carry.

The one thing you'll notice right away is that the "arms" of the headset are rather thick and rectangular. This is because they house a sound reduction chamber, which Otis states is the key to reducing incoming noise to a safe level while still allowing the shooter to hear normal conversation and range commands. The Ear Shields are available in two sound reduction levels, one at 26dB and the other at 31dB. Considering my prior hearing damage I opted to try out the 31dB model.

I took the Ear Shields with me on my next trip to the range and used them during a 4-hour session shooting AR-15's and AK's along with some oddball vintage surplus rifles. I have to say that I walked away from the session extremely impressed. First off, the Ear Shields are indeed very lightweight and comfortable. Typically, when wearing plugs or muffs I tend to take them out or pull them off in between shooting because they bug me. They aren't necessarily comfortable, I can't hear, and my ears get sweaty with muffs.

The Ear Shields were different. I tended to forget I was even wearing them. At one point during a longer break I did have them out of my ears but still had them resting on my head. When we went hot again I was looking around for the Ear Shields and couldn't find them until I realized they were still over the top of my ball cap.

As far as actual function, they work extremely well. While noise is slightly muffled it was not to the degree you come to

expect with regular plugs of muffs. I could clearly hear conversations not just between myself and my buddy but also the other group shooting further down the bay from us. With that said, the rifle fire was more than amply quieted even when I was adjacent to the shooter using the spotting scope, a spot which can often be unpleasant due to the noise and blast.

More importantly, at the end of the day, I realized that I never found the hearing protection uncomfortable. I was able to hear clearly, and I never once felt that the noise level from gunfire was too high. I also never had a plug slip loose, and I didn't need to keep adjusting the head set as I often have to do with regular earplugs.

With the combination of comfort and function, and the added bonus that you never have to worry about batteries, the Ear Shields from Otis Technology are a real winner. Even better is the fact that they are extremely affordable, selling for only \$19.99 for the 26 dB model and \$24.99 for the 31 dB model. At those prices I can afford to buy a couple more pairs to stash in my various range bags and to leave at work so that I always have a set handy. **GW**

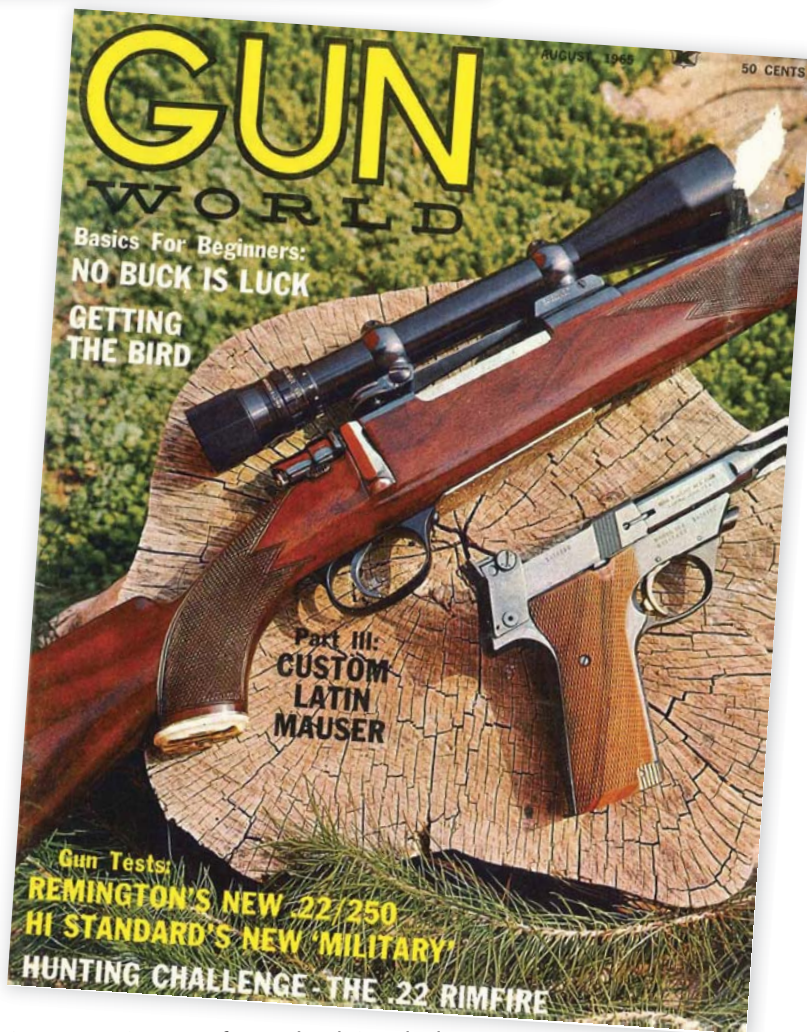
 **CONTACT**

Otis Technology
OtisTec.com

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The advertiser index is provided as a service to *Gun World* readers. *Gun World* is not responsible for omissions or typographical errors on names or page numbers.



▲ Our August 1965 cover featured High Standard's "new" military target pistol and a customized Peruvian Mauser.

A High **STANDARD**

By Craig Hodgkins

Just when I was convinced that the advertising and marketing "strategies" of the mid-1960s — as played out so convincingly (and enjoyably) in the recently completed *Mad Men* series on AMC — were exaggerated at the very least, I came across this introductory passage to an unsigned review of High Standard's "latest and greatest" in our August 1965 issue.

"We got our first look at High Standard's new "military" line of .22 automatic target handguns during the NRA bash in Washington, D.C.," the article opened, "when Bill Donovan, Ed Lomax and Bob Matt were pouring drinks during an informal-type formal cocktail party aimed at writers and editors.

"About the only member of the Gun World staff who was not pres-

ent for the original unveiling—adequately and understandably held in the bedroom of the HS suite—was Duke Roberts. Being a police officer and not prone to payola in the form of the free booze Donovan and staff had been dispensing as they explained the wonders of their new offering, we returned to the West Coast and informed Roberts he had been selected to wring out the gun when it arrived.

"Meantime, Lomax had made it known that there were only a few test models available, but before departing the party, Jack Lewis had cornered him in a closet and threatened to spill a martini on his new suit if we were not promised a sample right away. Since the substance of those drinks would no doubt have dissolved the fabric, leaving him naked in the closet, Lomax was properly frightened, but asked to have the gun returned within two weeks of arrival so he could pass it on to another writer who was less threatening in his demands."

For the record, Roberts (a long-time law enforcement columnist and editor in addition to his duties for the Pasadena police force) liked the 18-degree grip angle on the front strap, mused about the pros and cons of using Derlin — a highly-stiff thermoplastic — on the fol-lower and floorplate and questioned the strength of the rear sight support, but overall rated the gun as a potential top target pistol.

But truthfully, the results of Roberts' review became a bit secondary after reading those opening paragraphs. I couldn't keep my mind off my next writer's event. **GW**

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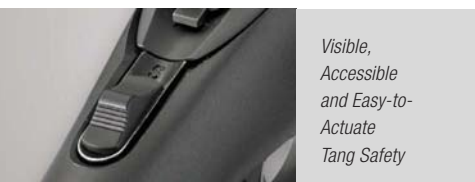
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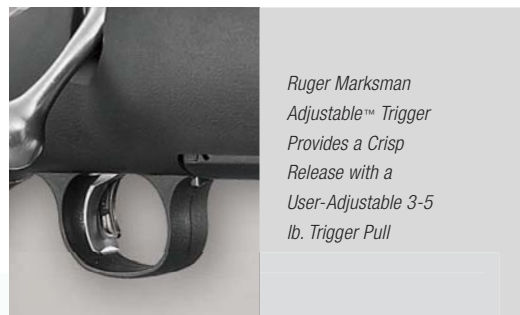
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